SPATIAL PLANNING FOR SOCIO-ECONOMIC DEVELOPMENT OF MEJA TEHSIL OF ALLAHABAD DISTRICT (U.P.)

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PREFACE

The present dissertation is an attempt to design a spatial plan for the socio-economic development of the Study Area, Meja Tahsil, Allahabad District, Uttar Pradesh. As planning has to be sectoral-cum-spatial, it has to evolve a viable strategy for spatial organization to meet the specific goals and objectives of the socio-economic planning. Accordingly, the thesis has been divided into the following 7 chapters which are well-linked together and present an integrated thematic thrust.

Chapter 1 focuses on conceptual framework, which provides raison d'tre for spatial planning as a viable strategy which determines the allocation of sectoral resources in a way that production activities and social facilities are available to all those who need and deserve them and minimizes micro-level inequalities.

Chapter 2 provides a spatial analysis of natural and cultural resources of the Study area and highlights its potentials and problems.

Chapter 3 attempts to identify basic units for spatial planning which can provide an integrated regional base for spatio-functional organization of the economy and society at micro-level.

Chapter 4 is devoted to spatial planning for agricultural development which is essential for the socio-economic development of the predominantly agrarian and rural economy of the study area.

Chapter 5 deals with spatial planning for industrial development of the region where rural industrialization is an essential ingredient of rural development and holds a great promise for generating employment opportunities and alleviating appalling material poverty.

Chapter 6 attempts spatial planning for development of social facilities, which determine socio-economic development of a civil society. It mainly addresses to the three core programmes of educational facilities, medical facilities and housing facilities, which enhance social development and improve quality of life.

Chapter 7 presents the summary and main conclusions of the study.

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Chapter 1

CONCEPTUAL FRAMEWORK

1.1 Introduction

In India the successive Five Year Plans have accentuated the spatial disparities in socio-economic development, which are not only inter-regional but also intra-regional percolating down to the micro-level spatial units. This is because "the more developed regions exercise a greater pull effect and attract the dynamic elements from the less developed areas and impoverish them to fatten themselves"[1] Besides our development plans heavily relied on the allocation of funds to different economic sectors and recklessly ignored the regional character of economy[2]. The alternative strategy lies in multi-level spatial planning which "incorporates the principle that proper decision-making is possible at any level if the strategy at each level is determined after a careful consideration of the potentials, needs and limitations of the next higher as well as the next lower levels of planning. Thus each level does not look upon planning as a self-contained activity at that territorial level, but recognizes the openness of the economy and always has an eye on spill-over associations, inter-relationships and complementaries"[3]. It leads to more objective assessment of local needs and resources and helps in "building spatial structures in correspondence with the optimization of economic development, social well-being and political aspirations of the people"[4]

1.2 Meaning and Concept of Space

Etymologically space implies a "continuous unlimited area or expansion". It is a multi-dimensional concept and has a wide connotation ranging from personal to global. The term space may be treated in a variety of ways from personal to global, as by itself it is a multi-dimensional concept. "The concept may be regarded as flexible – to be defined in particular contexts, to be symbolized in particular ways and to be formalized in a variety of spatial languages"[5]. In fact concepts of space

are founded in experience: economic space, social space, political space, intellectual space and cyber space are its illustrations. They have changed since antiquity as per intellectual capacity of the society and its cultural spatial perceptions.

The concept of geography as a science of space has been of great importance in the history of geographic thought. Space as the basic organizing concept in geographical methodology has come from Kant through Alexander Von Humbolt, Alfred Hettner and Richard Hartshornne. In the later part of the 20th century, geography has been christened as spatial synthesis[6]. "In Geography, knowledge of space represents the accumulation of factors about the spatial arrangements and inter-connections comprising human-environment relations and recognitions of fundamental concepts. Knowledge about space consists of the recognition and elaboration of the relations among the advanced concepts, derived from these primitives"[7], such as spatial organisation, spatial distribution, spatial patterns, spatial forms, spatial interactions, spatial hierarchies, spatial orientations, spatial processes, spatial behaviour, spatial diffusion, spatial analysis and so on.

At the representational level "the emergence of spatial concepts is intricably bound up with the structure of the culture in which spatial concepts are being developed. They are essentially spatial perceptions in the language of geography"[8]. It implies that the concepts of space vary from culture to culture and within broad cultural organisations among sub-groups.

The distinctive character of geography as a science can be defined in terms of spatial concepts. The task of the geographer is to describe and analyze the inter-actions and integration of phenomena in terms of space.

1.3 Concept of Region

On the basis of the elemental factor of space, a region is a geographic unit with some areal homogeneity which delimits its boundaries. It is the network of interconnections, which gives a region its unity. It has a nodal or focal point around

which the activities of the region as a whole evolve[9] . A. J. Herbertson felt that "a region is a complex of land, water, air, plant, animal and man regarded in the spatial relationship as together constituting a definite portion of the earth's surface"[10]. Isaiah Bowman observed: "We generalise real men and real places by grouping them according to likeness of function or location. To think of groups is at once to be aware of the relationships between the groups. A given group has, like any of its members, a limited and particular set of conditions to face. These conditions are spread over an area or region. It is the purpose of the geographer to study limiting or significant environmental conditions in the geographical association basing his understanding upon physical environment on the one hand and upon human relations on the other"[11].

In fact, "in the concept of region we are not dealing with a single or unambiguous idea, but rather with a variety of notions and approaches"[12] That is why a region is called a spatial reality with a distinctive purpose or approach and has been long treated as the core concept of geography.

1.4 Types of Regions

Regions are mental constructs, which assume spatial forms in correspondence with the needs, purposes and approaches to regionalisation. That is why there are many kinds of regions: single feature regions, multiple feature regions or composite regions like the 'pays' of France or the 'Campages' of the U.S.A.; formal regions and functional regions; physiographic regions, climatic regions, biotic regions, agro-climatic regions; cultural regions, linguistic regions, population regions, population-resource regions, economic regions, urban regions, trade regions, developed regions, developing regions and under-developed regions; dynamic regions; prospective regions and problematic regions, etc (Vide Fig. 1.1). Berry and Hankin[13] have recognised three types of regions as follows :

(a) The 'region' in general sense in which the region is a priori

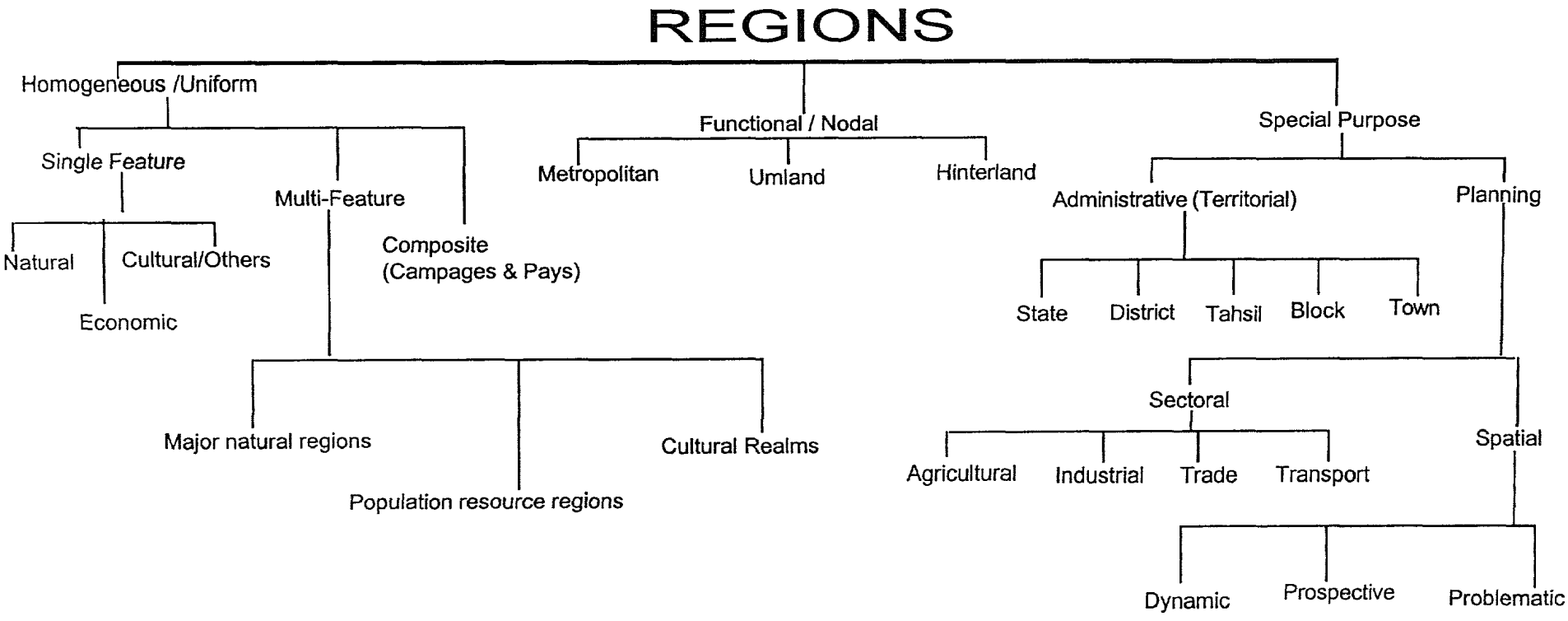

Fig. A schematic Typology of Regions

(b) A homogeneous or 'uniform' region in which the variations and co-variations of one or more selected categories within a specified range of variability and a norm.

(c) A region of coherent organisation or a 'functional' region. "This region is defined as one in which one or more selected phenomena of movement connects the localities within it into a functionally organized whole." An umland or a metropolitan region is the best example of a functional region.

According to John Orchard : "The optimum region for social and economic planning should possess the following characteristics:

(I) There should be some unifying core;

(ii) Its area should include all territory tributary to the core;

(iii) There should be an absence of serious conflicting interests within the area;

(iv) The region should not be so diversified that it will place too great burden upon the ability and training of the planners."[14]

M.H.Gopal has rightly observed: "I shall tentatively define a 'region' as operationally the most convenient and economically the most gainful spatial, sectoral or/and temporal unit for resource allocation, taking planning merely as a process, growth as the economic result and welfare as the ultimate goal."[15]

1.5 Concept of Planning

The term planning has varied connotations. But its essential ingredient is regulation and guided direction of socio-economic development of a country or a region. The Planning Commission has aptly remarked "Planning involves the acceptance of a clearly defined system of objectives in terms of which to frame over-all policies. It also involves the formation of a strategy for promoting the realization of ends defined. Planning is essentially an attempt of working out a rational solution of problems, an attempt to coordinate means and ends; it is thus different from the traditional hit and miss methods by which reforms and reconstruction are often undertaken"[16].

The National Planning Committee of India in its Report states: "Planning under democratic system may be defined as the technical coordination of consumption with social objectives set by the organs of representatives of the nation. Such plan is not only to be considered from the point of view of economics and raising the standards of living but must also include cultural and spiritual values and the human side of life"[17].

In fact, every type of planning reflects ideological moorings. It is thought of as a panacea for socio-economic ills. Robins has rightly observed: "To plan is to act with purpose, to choose and choice is the essence of economic acvitity"[18]

J.L. Nehru remarked: "The establishment of an egalitarian society in which equal opportunities are provided for each member so as to make the attainment of this equality of opportunity a reality."

1.6 Need for Planning

Planning is necessary for harmonizing limited resources with felt needs. The Directive Principles of our Constitution have laid down; "The State shall, in particular, direct its policy towards securing :

(a) that all citizens, men and women equally, have the right to an adequate means of livelihood;

(b) that the ownership and control of the resources of the community are so distributed as best to sub-serve the common good;

(c) that the operation of the economic system does not result in the concentration of wealth and means of production to the common detriment".

To achieve these cherished objectives, planning provides the desired strategy. Planning plays a crucial role in solving various socio-economic problems and in maximizing the prospects of quantitative and qualitative growth of our economy and society[19]. That is why our Government opted for planning as a means of socio-economic development and an egalitarian social order, because it helps in achieving the objectives in a shorter span of

time. It lends support to social acceptance of planning and people's participation in their own development. That is why the First Five Year Plan expressed the long-term objectives or goals of planning in India as follows; "Maximum production and full employment, the attainment of economic equalities or social justice which constitute the accepted objectives of planning under present conditions... None of these objectives can be pursued to the exclusion of others, a plan of development must place balanced emphasis on all these"[20]. B.S. Minhas states: "Securing rapid economic growth and expansion of employment, reduction of disparities in income and wealth, prevention of concentration of economic power, and creation of the values and attitudes of a free and equal society have been among the objectives of our plans"[21].

In short, the main advantages accruing from planning are as follows:

(a) It is a corrective measure for the distortions, which accompany the policy of laissez faire, as it is application oriented towards the common good and not maximisation of the profit of the capitalist individuals, resulting in unequal distribution of wealth and exploitation of labour. Lewis Arthur has rightly observed : "The policy of laissez faire is based on market economy, which cannot function adequately, without positive support from the State. Planning provides a hope and means of remedying the adverse effects of capitalist economy."

(b) Planning does away with the defects and distortions associated with production under the capitalist economy as it is oriented towards the welfare of the society.

(c) It also removes the internal defects like economic instability, trade cycles and fluctuating prices associated with the capitalist mode of production. The Planning mechanism introduced by the State as an intervention measure increases production, reduces exploitation and enhances economic stability.

(d) Planning restores balance between production and consumption through effective distribution mechanism. That is why many countries have opted for economic planning during the Post-Second World War era. It also controls periodic slumps and depressions, specially without causing lot of human misery. It promotes technological improvements, which expand productive capacities and speed up economic development. It also removes hurdles, which result from shortage of capital resources. Planning controls population growth, which is often related with economic underdevelopment as witnessed in the underdeveloped and developing countries of the World.

(e) Planning implies regulated efforts towards improving living standards of the society as a whole and promises social justice.

(f) It removes spatial disparities in development by development of backward regions.

(g) It maximises human choices as it attempts to provide equality of opportunity to every individual.

1.7 Types of Planning

The main types of planning are as follows:

(a) Economic Planning:

The Planning Commission has rightly observed: "Economic Planning is essentially a way of organising and utilising resources to maximum advantage in terms of defined social ends. The two main constituents of the concept of planning are : (1) a system of ends to be pursued and (2) knowledge as to over-all resources to their optimum allocation"[22].

The aforesaid definition presents an accurate and logical perspective of economic planning. But it has three major variants in terms of economic structure of a country: (a) Capitalistic Planning which is practised by the developed countries and is limited to regulation and control of economic activities for needs of the market economy; (b) Socialistic Planning as practised in Russia implies central/state control of all developmental activities where the private sector is non-existent or plays a

very insignificant role; and (c) Mixed Economic Planning as practiced in India where public sector and private sector operate side by side, but "private sector should reconcile the element of self interest with the element of social interest and in certain cases, the survival of private sector may be made conditional on the fact that it should serve the community at large. Furthermore, the private sector may not be allowed to figure prominently in every sector of the economy"[23].

Another way of looking at economic planning is whether it is centralised or decentralised. In centralised planning all the decisions regarding production and distribution are taken by the Central Authority (top-down approach) whereas in decentralised planning the decisions are taken at local levels which should necessarily dovetail the central socio-economic configuration (down-up approach). Indian economic planning provides an example of mixed economic system of centralisation and decentralisation as "in transformation of economy that is called for, the state has to play a role, for satisfying the legitimate expectations of the people." The State has to fix targets by taking into account physical resources as well as financial resources.

Another approach to economic planning relates to sectoral planning : agricultural planning, industrial planning and infrastructural planning which is dovetailed with regional planning. As India is basically an agricultural country, agricultural planning based on agro-climatic regions of the country deserved high priority for increasing the production of food and raw materials as well as a more rapid economic growth. In fact, the First Five Year Plan gave the highest priority to agricultural development, when agriculture and irrigation received 31% of the total plan allocations. However, there was a policy shift under the Second Five Year Plan, which gave preference to industry over agriculture.

The Industrial planning was also necessary in view of the significant contribution of industrialisation "as a base for the goodwill of primary sector, as a catalyst agent for the development of infrastructure, as a stimulant to generation of technologies through R&D effort, and as a growth multiplier". The industrial

planning gained momentum beginning with the Second Five Year Plan while the third Five Year Plan conceived of long-term perspective planning for industrial development. The present slow down of industrial production is telling upon the growth of our national and state economy.

The infrastructure provides the base for both agricultural development and industrial development. Infrastructural facilities include energy, transport, communications, banking, finance, science and technology as well as social overheads like health and education. Dr. V.K.R.V. Rao has rightly observed: "The link between infrastructure and development is not a once for all affair. It is a continuous process and progress in development has to be preceded, accompanied and followed by progress in infrastructure, if we are to fulfill our declared objectives of a self-accelerating process of economic development". It highlights the importance of concurrent infrastructural planning.

(b) Social planning:

Development is essentially human development, which aims at enlarging human choices and developing human capabilities[24]. Economic growth leads to economic development, but it cannot necessarily promote social development unless it is linked to social equity, implying that the fruits of the economic development should be enjoyed by all the people. Social planning conceives of social well-being and quality of life of the entire population. It seeks its raison d'tre in a public policy to enhance economic growth with social justice.

India's democratic society has opted for a "socialist pattern of society". "This means that the basic criterion for determining the lines of advance must not be private profit, but social gain, and that the pattern of development and the structure of socio-economic relations should be so planned that they result not only in appreciable increases in national income and employment but also in greater equality in incomes and wealth."[25]. In fact, this orientation is reflected in the Fourth Five Year Plan, whose two main objectives were "growth with stability" and

"progressive achievement of self-reliance", with the provisions of national provisions for the weaker sections of the community – the latter were called as the objectives of "growth with justice"[26] and "Garibi Hatao", (Removal of Poverty). They were also stressed under the Fifth Five Year Plan.

However, the reality is that the benefits of development have not been equitably shared by all. "The growing poverty in rural and urban areas undermines the principal objective of development which is improvement in the standard of living of the masses"[27]. In fact, the new Economic Policy of globalisation, liberalisation and privatisation has put the social planning in reverse gear by promoting monopolies, which goes against the letter and spirit of social justice and self-reliance. We still suffer from urban-industrial fundamentalism borrowed from the developed western world. This has tightly gripped our planning process almost at all stages, and it is because of this that, in spite of all changes in our development strategies, the result continues to be alarmingly negative[28]. It is high time to promote the cause of social planning for establishing an egalitarian social order, which alone can ensure sustainable development.

It needs to be underlined that development should be man-centered and society-based. It should harmonize the people's needs with physical resources and enhance the participation of people in formulating and implementing the plans for their development. There is need for widening the sphere of social services like education and health, which build social capabilities and promote social well-being of the people. Their social participation is sine qua non for social development and population planning.

R.P. Misra has rightly observed: "Distinctive cultural traditions and local variations which develop in response to the total environment and to historical events have contributed to the development of certain cultural traits which may or may not have parallels elsewhere. This means that all cultures change, but they may change in different ways"[29]. It implies that while analysing the socio-economic

matrix of people, their distinctive cultural traits should be closely examined as they help in understanding their social needs and cultural ethos in terms of social planning which require "identification of existing social inadequacies and consequent desirable social gains". "Social analysis should include a careful delineation of those social issues which will be affected by physical and biological changes and accommodations that must be made as a consequence of change"[30] Lassey has further observed: "Social scientific inputs to planning will require analysis of existing and potential population characteristics in terms that are substantially more detailed than might be a general concern, cultural uniqueness, values, belief systems, attitudes, behavioral patterns of individuals, groups and organizations and preferences for community structure will each be relevant points of enquiry. The ideologies and participation patterns will be important issues in the definition of acceptable planning goals and in the implementation processes for achieving these goals"[31].

(c) Spatial planning

Since all growth processes and their consequences occur in space, the space must be treated as a fundamental basis of planning. This provides the raison d'tre for "spatial planning and the future spatial structure as a point of departure or else as a foundation of the general economic planning" [32]. It has been recently realized that the balanced socio-economic spatial organisational system can be achieved through spatial planning. The regional analysis provides its analytical tools for the study of "the diverse organisational and institutional structure of society as they govern the behaviour and spatial distribution of population and economic activity"[33]. Koloszar, has observed: "A settlement system is a spatial framework of the social and economic activities"[34].

R. L. Singh has visualized the application of the concept of spatial dynamics for regional development at three levels: homogeneity, interaction and dynamic spatial processing which are of basic concern to spatial planning[35]. The spatial

organisation of developing countries like India is characterized by spatial inequalities: inter-regional, intra-regional, urban-rural, inter-urban and intra-urban. It is reflected in imbalances in functional organisation of spatial structures. Spatial planning attempts to identify the spatial gaps and rectifies the regional socio-economic imbalances as there is inter-dependence between socio-economic development and spatial structure. In fact it is an axiom: "for a particular type and level of socio-economic development, there is a particular type of spatial structure". As Planning has to be sectoral-cum-spatial, it has to evolve a strategy for spatial organisation to meet the specific goals and objectives of planning.

R.P. Misra has rightly observed: "Spatial planning is the sum total of the concepts, methods and techniques of evolving a desired spatial organisation and structure. It is often used as co-terminus with regional planning. Theoretically speaking, the concepts of space are more dynamic and open than the concepts of region. Space cuts across regional boundaries. It is a process which is continuous, temporaily, vertically and horizontally. In practical terms, integrated regional planning can be considered to be an important dimension of spatial planning"[36].

1.8 Spatial Planning and Regional Development

Spatial planning attempts to determine the allocation of sectoral resources in a way that "productive activities and social facilities are available to all those who need and deserve" and minimize inequalities in incomes and welfare so that a spatial structure conducive to planned development of the country or region is evolved"[37].

As spatial organizations and human activities are determined by the modes, the networks and the flows linking the nodes, through networks, "the efficiency of the spatial structures depends upon the location and density patterns of the nodes, the shape and density of the networks and the quantity and quality and directions of the flows". The task of spatial planning is to analyze the spatial structures, evaluate

the efficiency against the needs of the national and regional economies and generate structural changes to meet the objectives of planned development" [38].

Spatial planning is an interface between development processes and spatial structures. Its logistics aims at building multi-level spatial structures in correspondence with the optimization of economic development and social well-being and political aspirations of the people because "spatial structures are not inert but living entities which reflect temporal transformation that a particular region has undergone in response to the changing socio-economic perspectives."[39] That is why "spatial organisation is an important problem for all economies regardless of whether they are feudal, capitalist, and socialist and yet the particular form of spatial organisation will reflect the types of socio-economic relations encountered"[40].

Accordingly spatial planning should be viewed as a strategy for regional development at sub-national levels and strengthening the national economy as a whole.

1.9 Locational Theories of Spatial Planning

(a) Central Place Theory

In 1933 Walter Christaller[41-a] developed his deductive model of central places for explaining "the size, number and distribution of central places on the assumption that there is a hierarchical system of central places and that each class performs a specific group of central functions" [41-b]. The more central functions a central place performs, the higher its rank. It implies that central functions are not uniformly distributed throughout the region, but are concentrated at certain focal points/central places according to their hierarchy and range. Moreover, these central functions not only serve the central places to which they are related, but they also serve their hinterlands/complementary areas, which are determined in each case by the range of each central function. "Christaller demonstrated that the final solution for a group of central places of similar order is a set of hexagonal

complementary regions where the central places are arranged in a regular lattice" [41-c].

In spatial planning such central places are identified for locating central functions (e.g. banks, hospitals, markets, post offices and schools, etc.) on the basis of their population thresholds and central functions and hinterlands/complementary areas, because lower order functions are located at small central places, whereas higher order functions are located at larger centres. Evidently the Central Place Theory has much relevance for integrated spatial planning, which takes into account the whole settlement system of the region. Bronger has rightly observed : "A major task of regional planning is considered to be, to offset the spatial and functional gaps by developing and encouraging central places as centers of development in rural areas (as the main aim is 'development' and not only 'growth' , these centres should be named "development centres/poles" instead of "growth poles/nodes"). By extending the practical application of the 'Central Place Theory' we can deduce the general recommendation to achieve the intermediate compromise by efficient planning, by :

(1) establishing and developing a system of effective intermediate and lower ranking centers in order to achieve improved and more evenly spaced provision of major crucial central functions for the rural population, and

(2) simultaneously by providing new jobs, especially in the secondary sector by establishing industries in those selected centers"[42].

(b) Growth Centre Theory

The Growth Centre Theory derives its rationale from Perroux's Theory of Growth Poles. He visualised a growth pole, as a diffusion centre/focus in economic landscape endowed with a leading (propulsive) industry having forward and backward linkages with a group of associated industries. Boudeville and other workers applied it to geographic space "by suggesting the set of dynamic industries might be geographically clustered" and advanced the concept of "polarised region"

defined as "a heterogenous, continuous area localised in geographical space, whose different parts are interdependent through mutual complementary regions centered around a regional centre of gravity"[43].

It certainly provides a comprehensive framework for linking locations central places and regional growth"[44]. Mennes and associates have found it a tool of analysis for regional planners thereby "macro and sectoral planning can be made consistent with spatial planning via the development of national and international spatial strategies[45].

In India, the growth centre theory was adopted for rural development, particularly on the N.I.R.D. model enunciated by L.K. Sen[46] et.al. Accordingly, for spatial multi-level planning a six tier hierarchy of growth centres has been accepted as follows:

1. Growth Pole
2. Growth Centres
3. Growth Points
4. Service Centres
5. Central Villages
6. Basic Villages

The above scheme imbibes many of the characteristics of the Central Place Theory. Here growth pole is conceived as a regional centre for a macro- region of the country and is endowed with propulsive force, which acts through backward and forward linkages with growth centres, growth points, service centres, central villages and basic villages in the nested settlement system. R.P. Misra has pleaded that "in regions where such poles have not emerged, it is the task of the planners to create one through a number of policy decisions regarding investments in infrastructure (especially transport and communication network), social capital (educational institutions, hospitals, etc.), POT (production oriented territories like financial institutions) and manufacturing[47] etc.

(c) Agropolitan Development Theory

The mechanistic as well dualistic approach involved in growth centre theory led to a critical examination at an international conference at Nagoya in 1975, where John Friedman proposed an alternative strategy of Agropolitan Development. It offers a spatial framework of integrated development "with a more equitable distribution of economic benefits, the direct involvement of local people in the process of development and growth based on the activation of rural people, agriculture and resources"[48]. In fact, they have pleaded for transfer of more powers to smaller units of geographical area and lower levels of administration as postulated in the 73rd Amendment of the Indian Constitution.

R.P. Misra and B.S. Bhushan have rightly stated: "The agropolitan approach to regional development aims at creating self-reliant communities by selective spatial closure, commercialisation of productive wealth and equalisation of access to bases for the accumulation of social power"[49]. It revives Mahatma Gandhi's idea of self reliance of the village community and the "planning in economic circles".

In fact the agro-politan approach aims at a "recovery of territorial life" and creation of "community feelings on the basis of rural units, which are culturally, economically and politically definable." It seems to revive the community development programmes initiated in 1950s with a stress on the territorial/spatial dimension as it is basically a spatial strategy for the integrated development of space and resources of an agro-politan district comprising a small town (10,000-25,000 population) with surrounding village communities within a community radius of 5-10 km and population of 50,000-1,50,000 persons. It provides a strategy for "an integrated rural-urban development".

Like growth centres and central places, the agro-politan centres have their own four tier hierarchy : agro-polices, agro-politan nodes, agro-foci and agro-points "which are service-cum-growth centres under the agro-politan development strategy, which postulates the agro-politan district as a functionally viable territorial

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Chapter - 2

THE STUDY AREA : RESOURCE BASE

2.1 Spatial Attributes

The Study Area comprises Tahsil Meja (lying between 25° 2' N and 25° 18' N latitudes and 81° 46' E and 82° 20' E longitudes) which is situated in the south eastern part of the Trans-Yamuna Tract of District Allahabad, Uttar Pradesh (Fig. 2.1). It covers an area of 874.6 km2 and is bounded in the north by the Tons, which separates it from the Tahsils of Karchhana and Handia, in the south by the newly created Tahsil Koraon, in the east by the districts of Varanasi and Mirzapur, and in the west by the Tahsils of Karchhana and Koraon,. Its maximum east-west length is 51.4 km. and its maximum north-south length is 27.2 Km. It has an elongated and attenuated spatial form, which is not ideal for good administrative control.

Administratively it comprises four Development Blocks (vide Table 2.1) viz, Uruwa, Meja, Manda and Koraon (Fig. 2.2). Incidentally, prior to its bifurcation into Tahsil Meja and Tahsil Koraon, it had the same Development Blocks under its administrative jurisdiction and covered an area of 1,710.8 km2. The bifurcation has created confusion by retaining the names of the Manda and Koraon Blocks in both the Tahsils (Meja and Koraon), while transferring major portions of these two Blocks to Tahsil Koraon along with 15 villages of Meja Block. It would have been better if 11 remaining villages of Block Koraon were annexed to Block Manda for maintaining the alignments of its southern boundary. For comparative analysis (block-wise) data for 1990-91 had to be adjusted to the present geographical boundaries of the Tahsil.

PHYSICAL LANDSCAPE

2.2 Structure and Relief

Structurally the Study Area is a segment of the Middle Ganga Plain[1], but it as

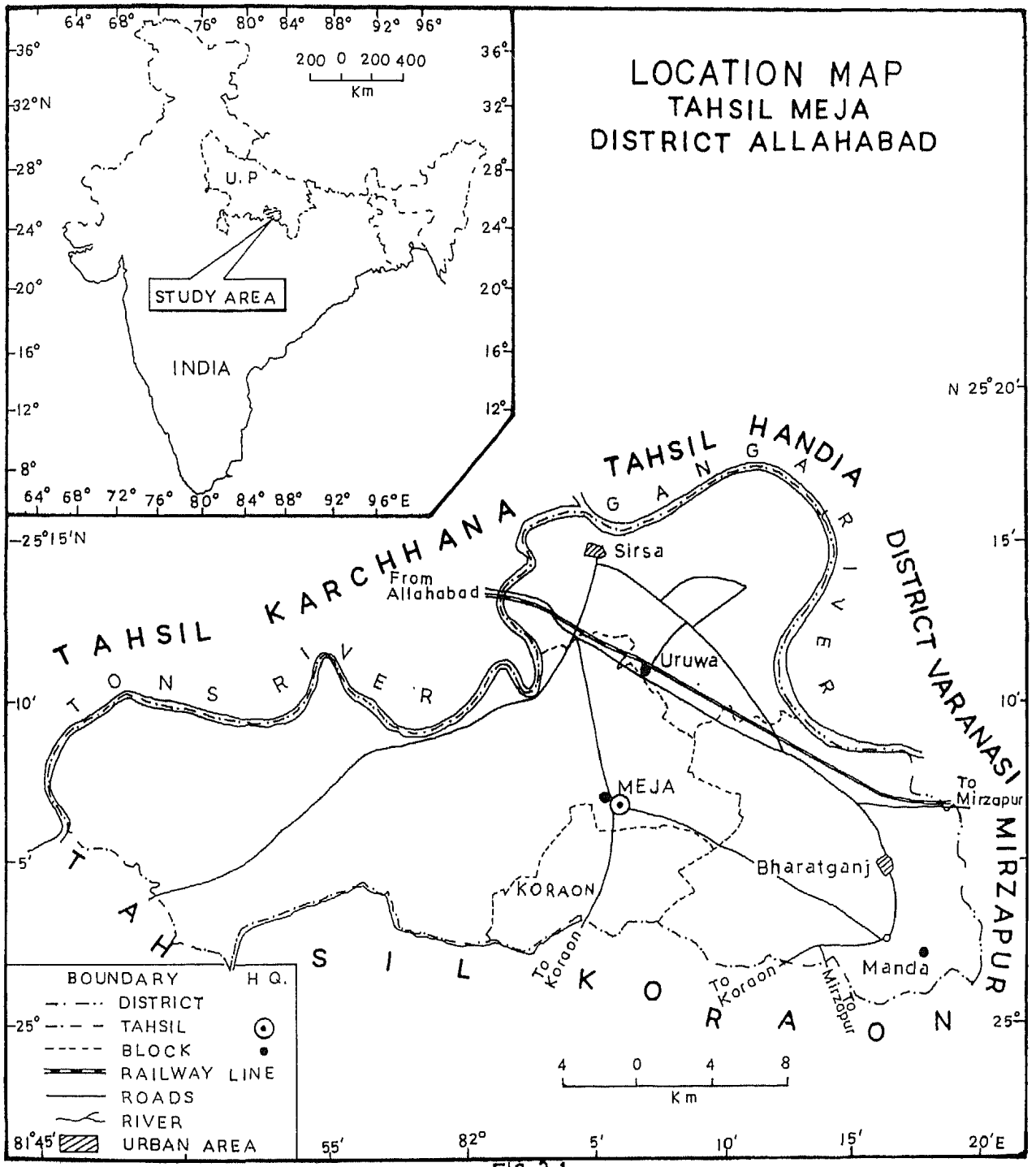

LOCATION MAP
TAHSIL MEJA
DISTRICT ALLAHABAD
64° 68° 72° 76° 80° 84° 88° 92° 96°
36° 32°N 28° 24° 20° 16° 12° 8°
200 0 200 400
Km
U.P
STUDY AREA
INDIA
64° 68° 72° 76° 80° 84° 88° 92° 96°E
N 25°20'
25°15'N
TAHSIL KARCHHANA
TAHSIL HANDIA
DISTRICT VARANASI
MIRZAPUR
GANGA RIVER
TONS RIVER
Sirsa
From Allahabad
Uruwa
MEJA
To Mirzapur
Bharatganj
KORAON
To Koraon
To Koraon
To Mirzapur
Manda
TAHSIL KORAON
4 0 4 8
Km
BOUNDARY
DISTRICT
TAHSIL
BLOCK
RAILWAY LINE
ROADS
RIVER
URBAN AREA
H Q.
81°45'
55'
82°
5'
10'
15'
20'E
25°
15'
10'
5'

Fig. 2.1

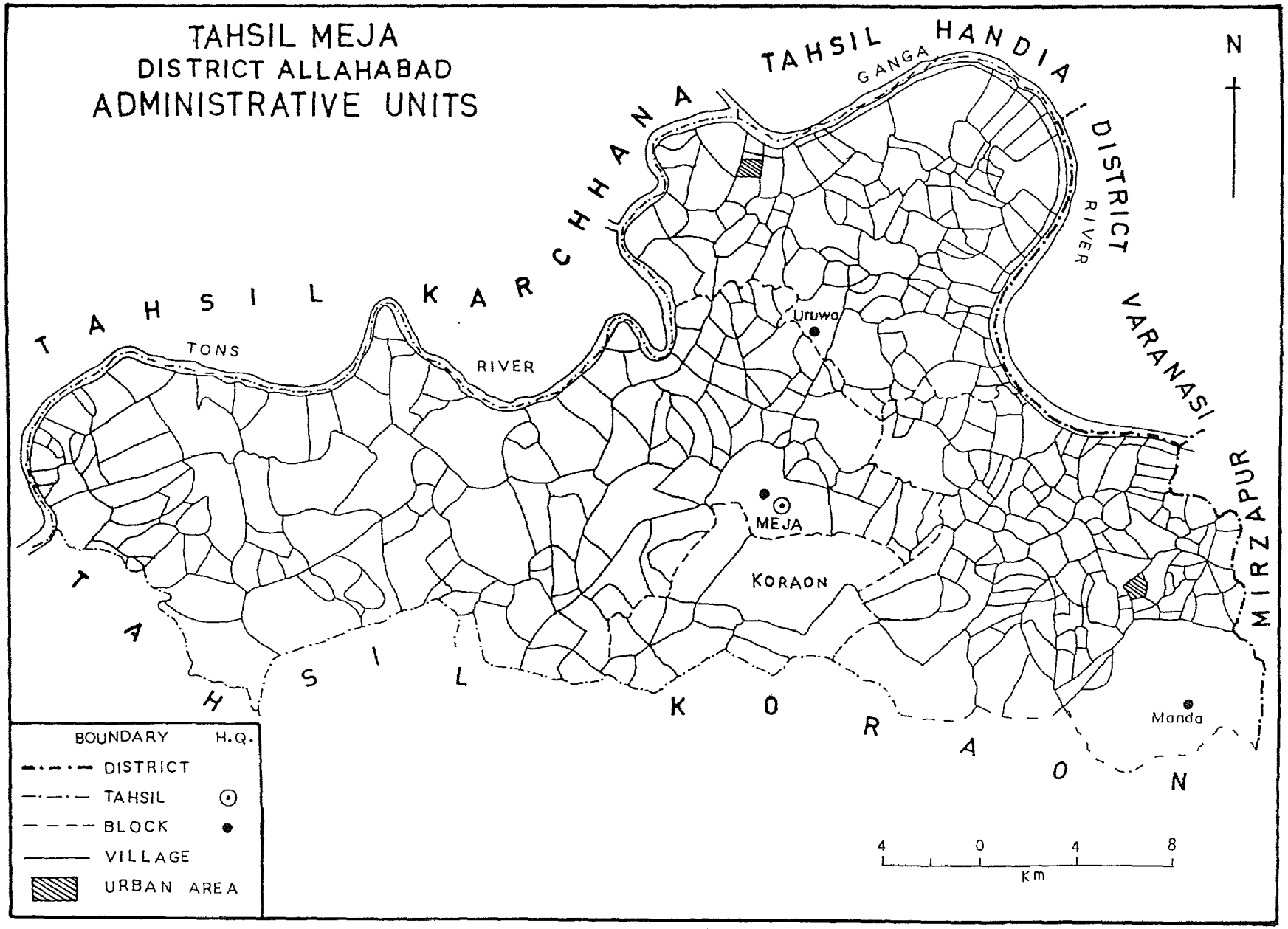

TAHSIL MEJA
DISTRICT ALLAHABAD
ADMINISTRATIVE UNITS
TAHSIL HANDIA
GANGA
DISTRICT VARANASI
RIVER
N
TAHSIL KARCHHANA
TONS
RIVER
Uruwa
MEJA
KORAON
TAHSIL KORAON
MIRZAPUR
Manda
BOUNDARY H.Q.
DISTRICT
TAHSIL
BLOCK
VILLAGE
URBAN AREA
4 0 4 8
Km

Fig. 2·2

Table 2.1

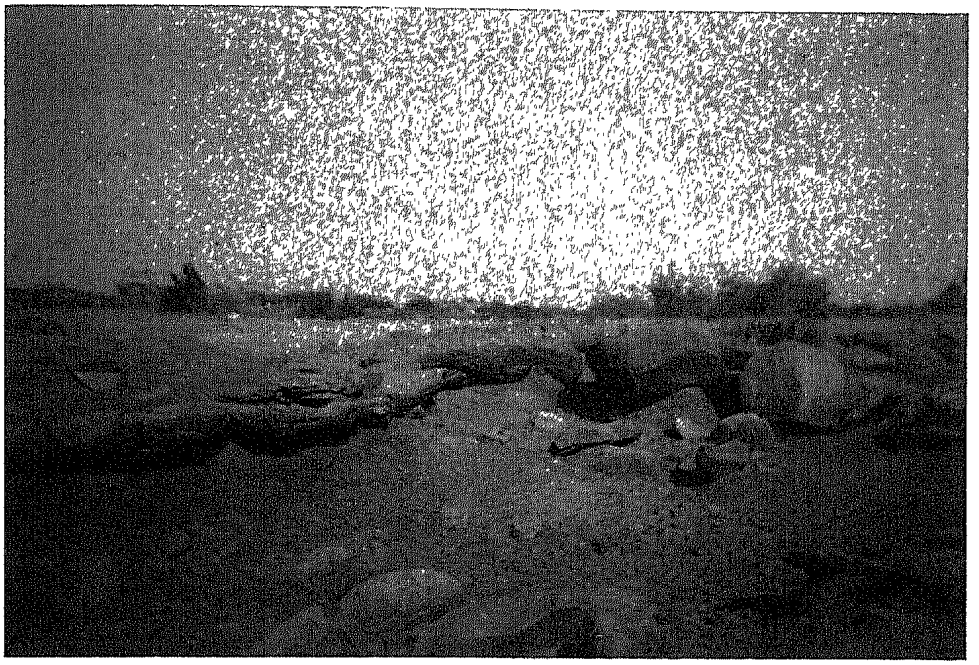
Change in Geographical Area of Tahsil Meja

Name of Block	1990-91		2000-01	
	Area (Km^2)	No. of Villages	Area (Km^2)	No. of Villages
1. Uruwa	173.2	120	173.2	120
2. Meja	450.2	159	407.5	144
3. Koraon	669.4	192	43.1	11
4. Manda	418.0	200	250.8	120
Total Tahsil	1,710.8	671	874.6	395

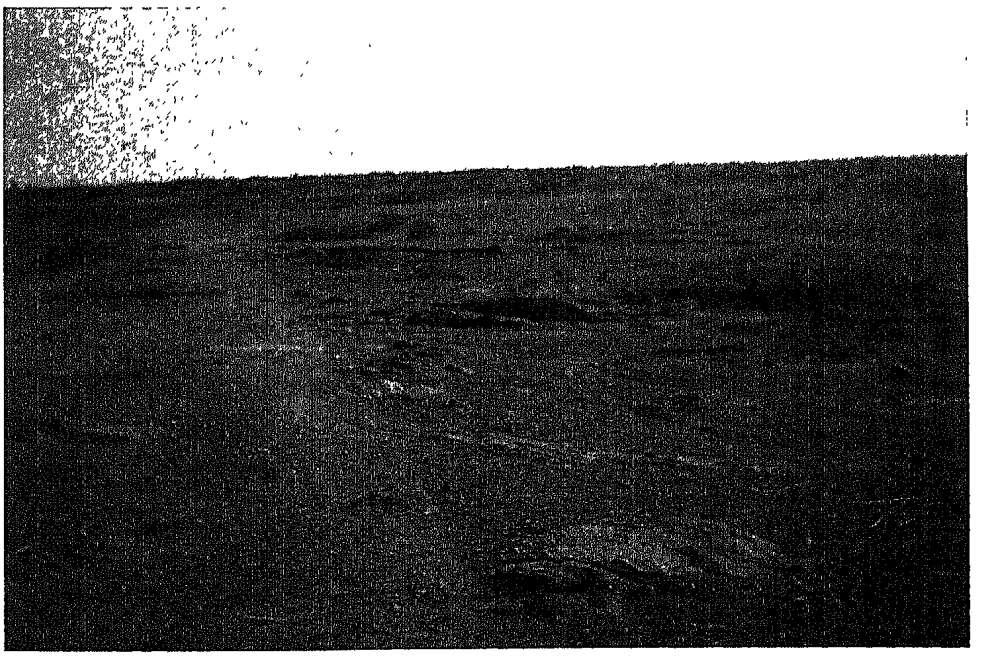
Source: District Statistical Bulletin (1990) and Development Block Records (2000)

a more complex geological structure as the southern Vindhyan rock system penetrates into its southern fringes, (PLATE 1 A,B) which are characterized by varying elevations, rocky outcrops and dissected topography as contrasted with level alluvial topography of the Tons Basin in the northern part. Here the Vindhyan detritus merges in the Gangetic sand and silt. In the northern part the Gangetic alluvium consists of alterations of fluvial deposits of sand, silt and clay. The thickness of alluvium increases from south to north as revealed by tube-well borings[2]. The northern part of Tahsil Meja is composed of the Gangetic alluvium, the deposition of which commenced in the Pleistocene period (after the uplift of the Himalayas) and the process is still continuing[3]. Nodular concretions of calcium carbonate form large to small lenses within many alterations. The southern fringe of alluvium is under laden by sand stones. At places sand stone is highly friable rock giving rise to loose whitish medium to fine sand.

The region may be divided into two physiographic units: (I) the Tons Basin, which is characterised by level alluvial topography, marked by scattered alluvial eminences and furrowed by the small streams and nalas joining the main stream

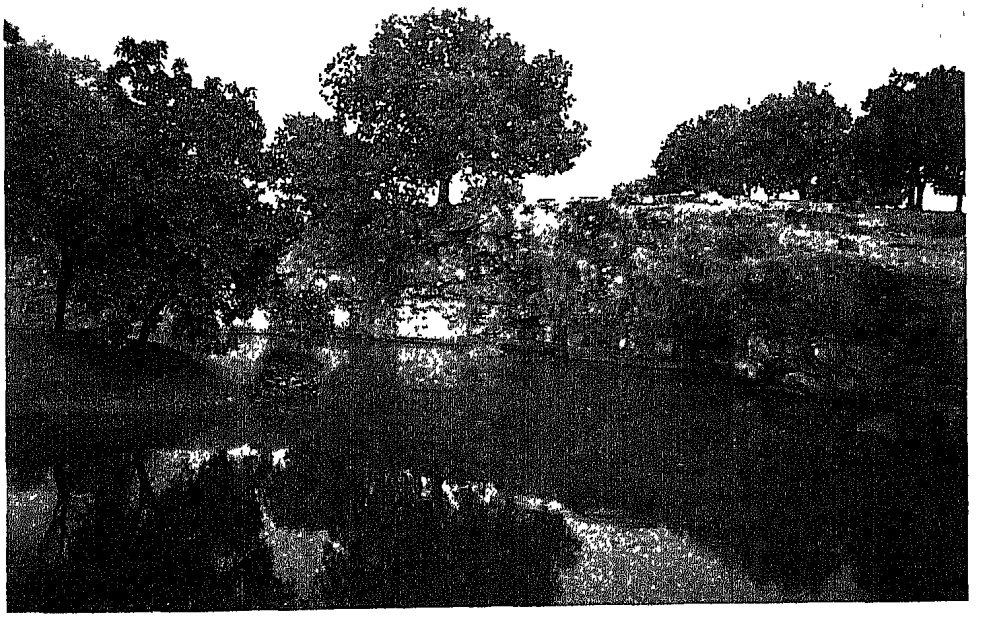


(A) A VIEW OF TERRAIN, KORAON



(B) A VIEW OF TERRAIN IN UPLAND

(A) BRIDGE OVER THE TONS RIVER



(B) ROCKY STRUCTURE IN MANDA BLOCK

(A) VINDHYAN UPLAND IN MANDA BLOCK

(B) ROCKY TERRAIN OF BASAHRA (KORAON BLOCK)

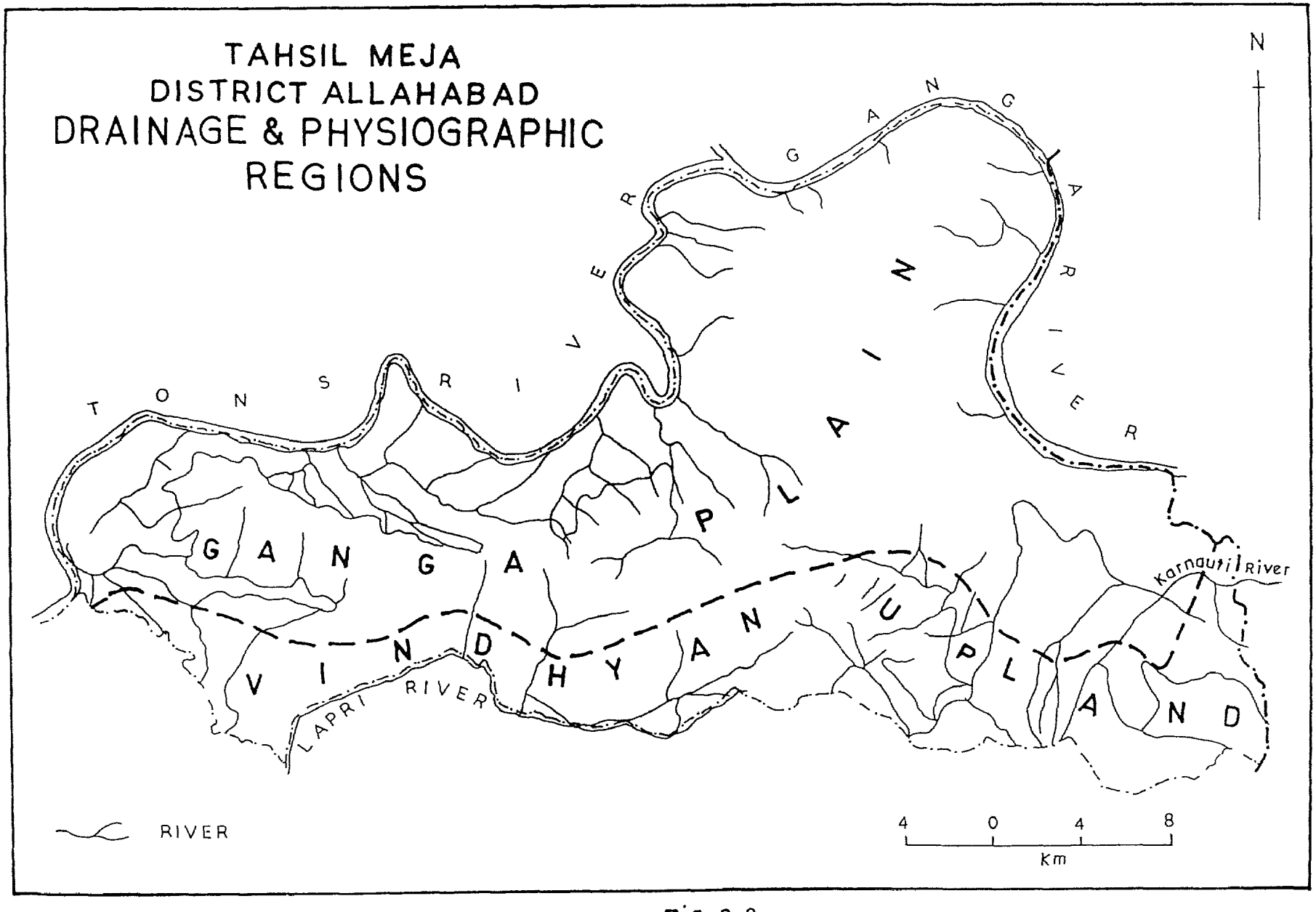

TAHSIL MEJA
DISTRICT ALLAHABAD
DRAINAGE & PHYSIOGRAPHIC
REGIONS
N
GANGA RIVER
TONS RIVER
GANGA PLAIN
GANGA DHYAN UPLAND
Karnauti River
LAPRI RIVER
RIVER
4 0 4 8
Km

Fig. 2·3

(A) LAPRI NADI IN MEJA BLOCK

(B) KARNAUTI RIVER IN MANDA BLOCK

The winter season begins in mid-November and continues till February and is followed by the summer season till mid-June. The south western monsoon then ushers in the rainy season, which lasts till the end of September. In between the rainy season and the cold season lies the transitional post-monsoon season (sharad).

2.4.1 Temperature

As there is only one meteorological station at Allahabad its data has been taken for granted for Tahsil Meja as well. January is the coldest month of the year when the mean maximum daily temperature and mean minimum daily temperature are 23.7° C and 9.1° C respectively, but during a cold wave spell it may go down to 1° C or so above the freezing point. The temperature rises steeply during March and April and attains its zenith in May (the hottest month) with the mean maximum daily temperature and mean minimum daily temperature being 42.1° C and 27.4° C respectively (vide Fig. 2.4). It is also visited by hot, dry and dusty winds (loo) which are sometimes transformed into heat waves. But the temperature conditions change with the onset of the monsoon. It is well reflected in the maximum daily temperature (39.8° C) and minimum daily temperature (28.9° C) of June. Similar trends continue till August and September. By October there is a perceptible change in temperature as both the day and the night temperatures start decreasing gradually till the cold season sets in.

2.4.2 Rainfall

The annual normal rainfall at Allahabad is 980.1 mm, while at Meja it is 1,065.2 mm[7]. It shows that the rainfall decreases from south-east to north-east in Allahabad District. Almost 88 percent of the annual rainfall is received during mid-June and September. July is the rainiest month (343 mm), followed by August (323.1 mm) and September (185.9 mm). On the whole rainfall is adequate for agricultural purposes, but its variability from year to year coupled with prolonged dry spells casts gloom on the faces of the farmers. The heaviest rainfall in 24 hours at

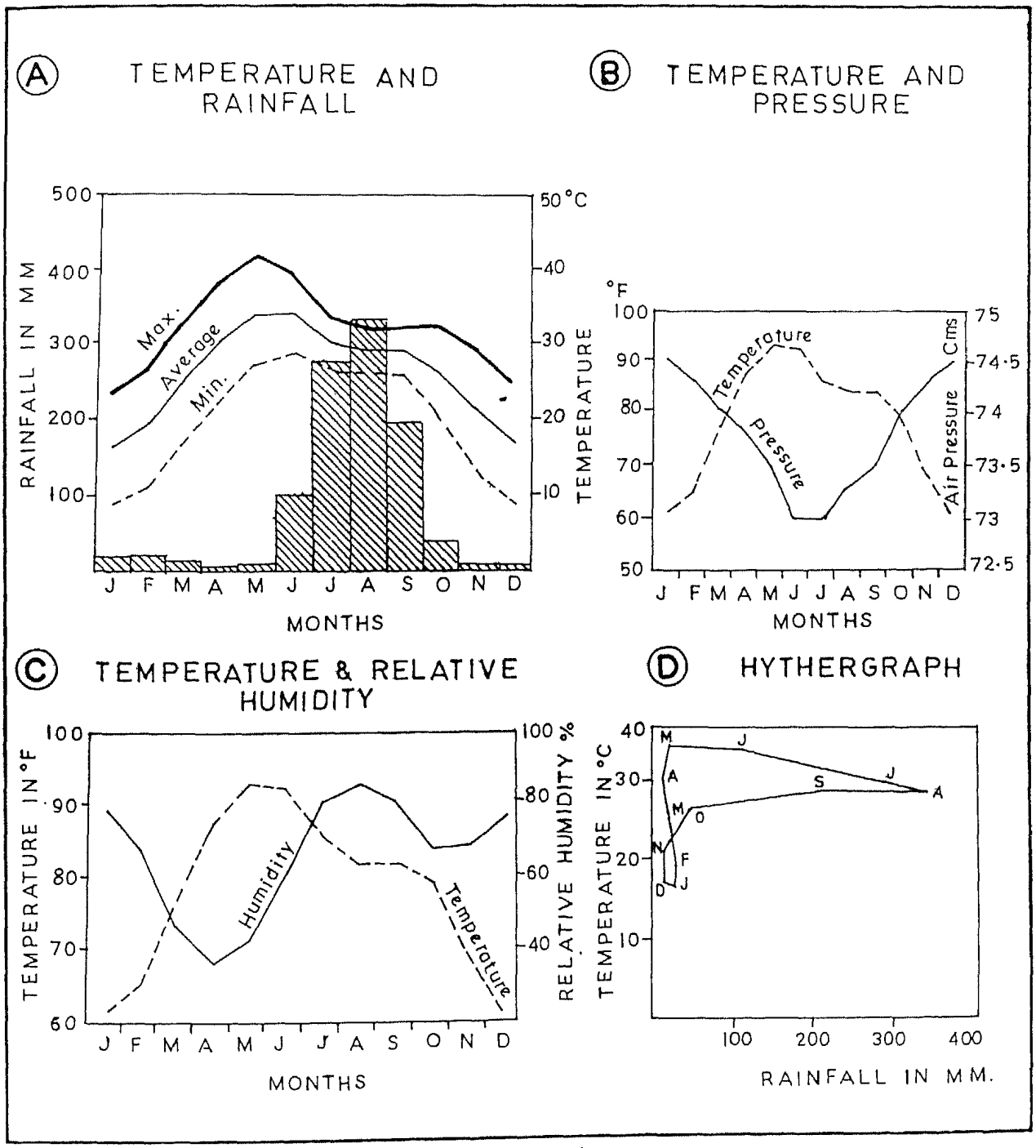

A
TEMPERATURE AND RAINFALL
RAINFALL IN MM
500
400
300
200
100
50°C
40
30
20
10
TEMPERATURE
Max.
Average
Min.
J F M A M J J A S O N D
MONTHS
B
TEMPERATURE AND PRESSURE
°F
100
90
80
70
60
50
75
74·5
74
73·5
73
72·5
Cms
Air Pressure
Temperature
Pressure
J F M A M J J A S O N D
MONTHS
C
TEMPERATURE & RELATIVE HUMIDITY
TEMPERATURE IN °F
100
90
80
70
60
100 %
80
60
40
RELATIVE HUMIDITY %
Humidity
Temperature
J F M A M J J A S O N D
MONTHS
D
HYTHERGRAPH
TEMPERATURE IN °C
40
30
20
10
M
J
A
S
O
N
D
F
100
200
300
400
RAINFALL IN MM.

Fig 2·4

2.4.3 Humidity and Cloudiness

The micro-regional climate is marked by high relative humidity during the rainy season (70-85 per cent). After the rainy season the relative humidity decreases progressively and during the hot summer season it is as low as 20 per cent. There seems to be an inverse relationship between temperature and humidity. During the rainy season the sky is often overcast, but during the rest of the year the sky is clear except during the passage of westerly disturbances.

2.4.4 Winds

Here the winds are generally light throughout the year with increase during the summer and rainy seasons. During the monsoon the wind blows either from south-west or east, but its force and velocity decline by October. However from November to May, they generally flow from west.

2.5 Soils

The soils of Tahsil Meja can be broadly classified into two categories: (I) Alluvial Soils and (ii) Black Soil[9] (Fig. 2.5)

The alluvial soils cover the largest area as they are found in the Khadar land of the Tons and Lapri rivers and their tributaries. The alluvial soils are of two categories: Khadar (newer alluvium with sandy texture and light colour) and Bangar (older alluvium) of more clayey composition and darker colour, often laden with lime nodules (kankar). The newer alluvium is found in the vicinity of river beds, where deposition takes place frequently, whereas the older alluvium (Bangar) is found in slightly higher interfluves. The alluvial soils differ greatly in texture and consistency (sands to loams to silt and heavy clay). The clayey soils are sometimes victim of injurious accumulations of sodium salt resulting in usar lands. They also suffer due to water logging and soil erosion as reflected in the ravined banks of the Tons, Karnauti; and the Lapri rivers (PLATE 5 A,B).

The black soils are found in scattered patches in Meja Tahsil between the Tons and the Lapri rivers. They are basically residual soils. They have developed in situ or have been brought from other areas, whereas weathering of outcrops and

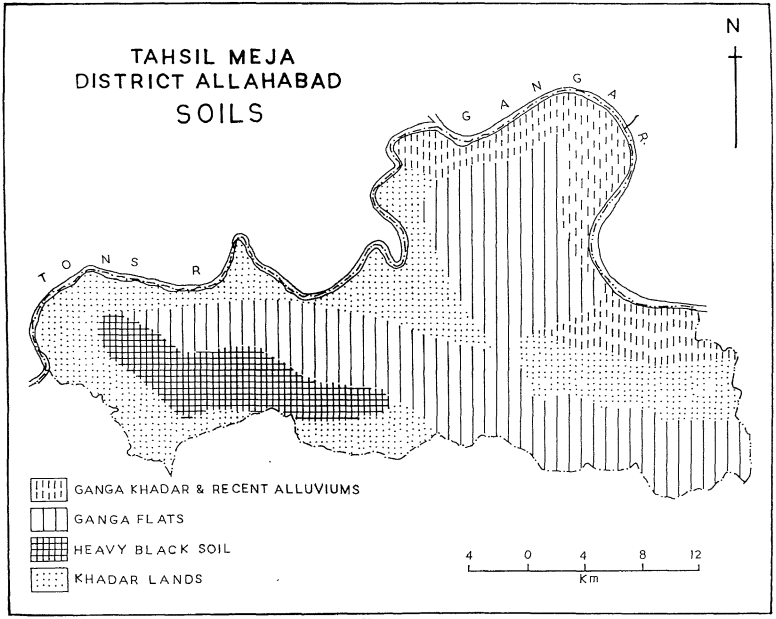
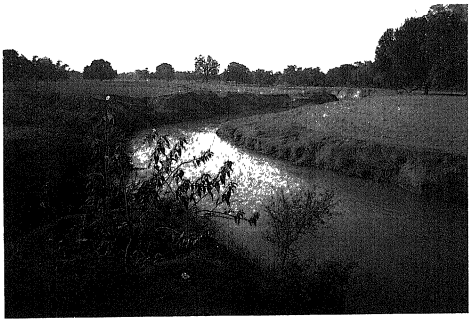

TAHSIL MEJA
DISTRICT ALLAHABAD
SOILS
N
G A N G A R
T O N S R
GANGA KHADAR & RECENT ALLUVIUMS
GANGA FLATS
HEAVY BLACK SOIL
KHADAR LANDS
4 0 4 8 12
Km

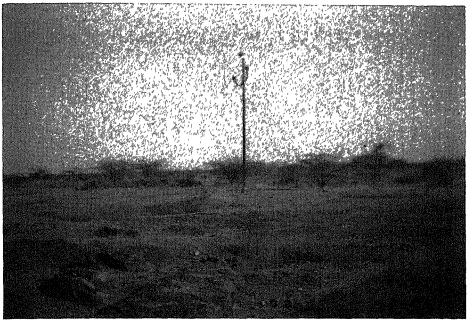
Fig. 2·5



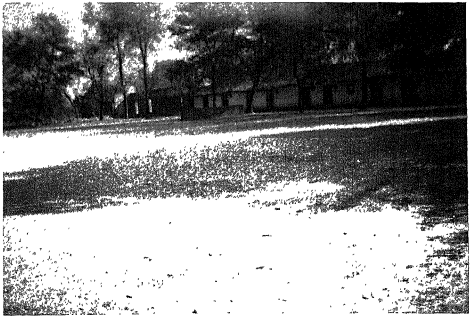
(A) SOIL EROSION ALONG LAPRI NADI (MEJA BLOCK)

(B) SOIL EROSION ON THE BANK OF KARNAUTI RIVER
(MANDA BLOCK)

PLATE NO-5

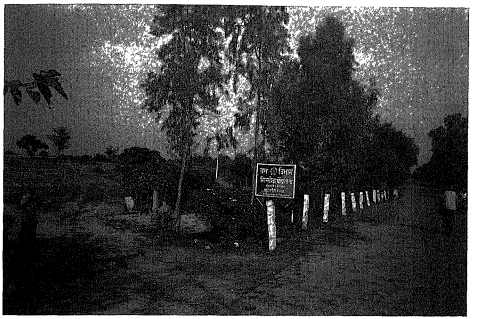


(A) SCRUB VEGETATION IN UPLAND TERRAIN



(B) WAYSIDE TREE PLANTATION IN MANDA BLOCK

PLATE NO-6



(A) EUCALYPTUS TREE PLANTATION BY FOREST DEPARTMENT
(KORAON BLOCK)

(B) MEJA TAHSIL HEADQUARTERS

PLATE NO - 7

claims and the area is facing acute shortage of fuel wood and timber and the menace of soil erosion is spreading its tentacles in new areas also.

2.7 Fauna

With the shrinking of forest and pasture lands, the wild life of the study area has been adversely affected and the ecological balance has been disturbed beyond repair. The main denizens of the regional forests are the tiger, bear, leopard, hyena, chinkara, sambhar, nilgai or blue bull, black buck and fox. The black bucks and nilgais cause much damage to standing crops. The sambhars are found in small herds in southern part of Meja and Manda Blocks.

2.8 Minerals

Mineral wealth of the Study Area is limited, but is significant for its socio-economic value. The mineral products include sand, building stone, kankar, brick earth and reh.

The Kaimur sand stone is an excellent building material and is obtained either by blasting or splitting the chief quarries. The Kols of Koraon are engaged in stone-breaking in the quarries, owned/leased by the contractors who exploit them.

Kankar is found in the bangar tract. Brick and pottery use local clay. Reh is used for washing purposes by the Dhobis and soda ash is used for making of soap and treating of hard water.

CULTURAL LANDSCAPE

2.9 Population

Man has a dual relationship with his environment, firstly, he is an element of its biological environment, and secondly, he is a creator and a modifier of the cultural environment. The study of population, particularly in a developing country like India, unfolds various facets of man-environment relationship and the quality of human life.[11] This is why population constitutes the most important element of the cultural landscape. The study of population helps in understanding the human resource potential of a region, its productive capacity and needs which a planning strategy is to target for achieving desired socio-economic goals.[12] It is, therefore,

necessary to know the dynamics of population, its spatial distribution (Fig. 2.6) and its economic and social characteristics.

2.9.1 Growth of Population

The dynamics of population is determined by fertility, mortality and migration, but separate data for these attributes are not available for Tahsil/ block levels. However, the growth of population in Tahsil Meja shows a distinctive sub-regional pattern as compared to District Allahabad (Vide Table 2.2).

Table 2.2

Growth of Population (1951-2001)

Year	Tahsil Meja		District Allahabad	
	Total Population	Decadal variation (%)	Total Population	Decadal variation (%)
1951	1,85,622	11.21	20,44,117	12.9
1961	2,52,484	22.28	24,38,376	19.4
1971	3,14,683	24.43	29,37,278	20.9
1981	4,21,017	33.80	37,97,033	28.8
1991	5,48,779	30.34	49,21,319	29.60
	(a)3,93,892			
2001	7,13,412	30.00	49,41,510	26.72
	(a) 4,34,372			

Source: District Census Handbook, 1971 and 1981 and Census of Uttar Pradesh, 1991 and 2001

Note: (a) gives the adjusted total population of Tahsil Meja after its bifurcation.

Table 2.2 (Fig 2.7) shows a steady and accelerated growth trend for both Tahsil Meja and District Allahabad, but excepting 1951, Tahsil Meja has had an upper hand during 1961-2001. During 1971-81 both recorded the highest growth rates of 33.88% and 28.8% respectively and so also the lowest growth rate for

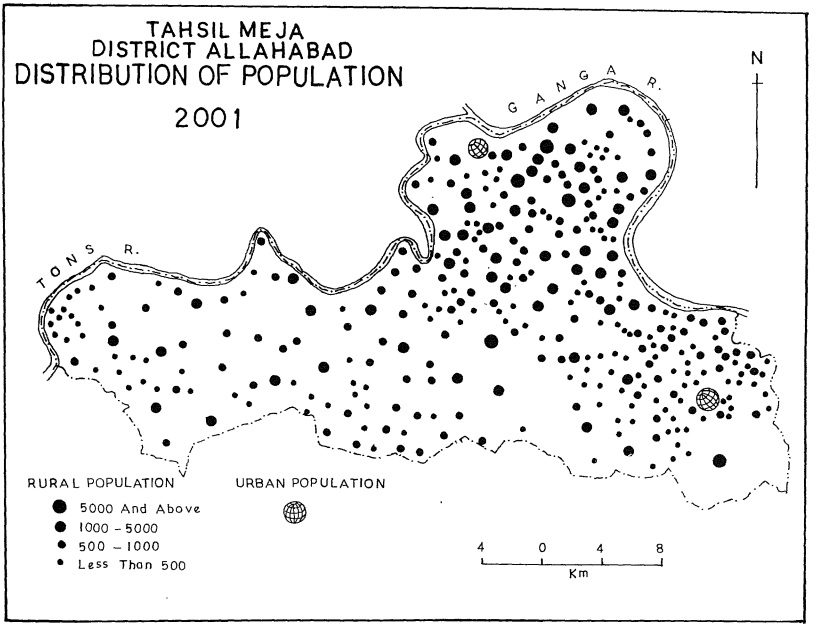

TAHSIL MEJA
DISTRICT ALLAHABAD
DISTRIBUTION OF POPULATION
2001
N
G A N G A R.
T O N S R.
RURAL POPULATION
5000 And Above
1000 – 5000
500 – 1000
Less Than 500
URBAN POPULATION
4 0 4 8
Km

Fig. 2.6

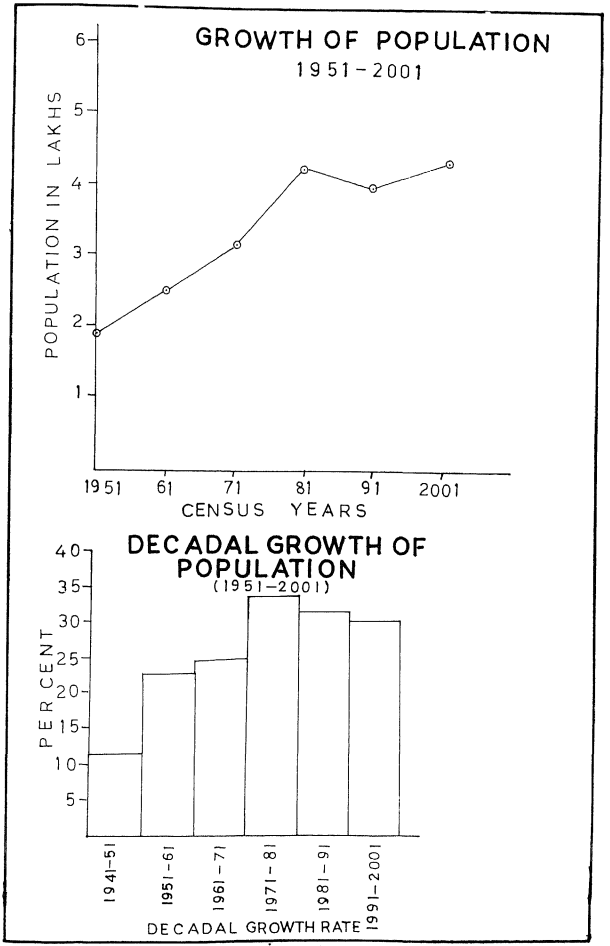

GROWTH OF POPULATION
1951-2001
POPULATION IN LAKHS
6
5
4
3
2
1
1951
61
71
81
91
2001
CENSUS YEARS
DECADAL GROWTH OF POPULATION
(1951-2001)
PERCENT
40
35
30
25
20
15
10
5
1941-51
1951-61
1961-71
1971-81
1981-91
1991-2001
DECADAL GROWTH RATE

Fig.2.7

1941-51. This difference is partly due to differential land extent and their total population, but it also owes to socio-economic disparities affecting fertility, mortality and migration patterns. While Tahsil Meja remains essentially a rural and agricultural tract, District Allahabad has a more diversified and developed economy and an important urban segment of 20.77%. The implementation of the family planning programme in Tahsil Meja is rather tardy due to administrative negligence, higher illiteracy and poverty as well as social beliefs and customs of the rural/tribal folks.

2.9.2 Distribution of Population

Table 2.3 gives the block-wise distribution of population in the Tahsil and highlights wide disparities in spatial distribution of population (Fig. 2.6). The table has

Table 2.3

Block-wise Distribution of Population in Meja Tahsil

Name of Block	1991		2001	
	Total Population	Density of population (persons/km^2)	Total Population	Density of population (persons/km^2)
1. Uruwa	1,31,385	778	1,70,798	986
2. Meja	1,06,755	262	1,39,905	343
3. Koraon	10,731	249	13,950	324
4. Manda	85,021	339	1,10,529	363
Total Tahsil	3,93,892	451	4,34,372	496

been adjusted to the bifurcation of the Tahsil, which has reduced its both area and population (1991: area 1,710 km^2 and population 5,48,799) and 874.6 km^2 and 3,93,892 persons (1991). The estimated population for 2001 has been also adjusted to the present territorial limits.

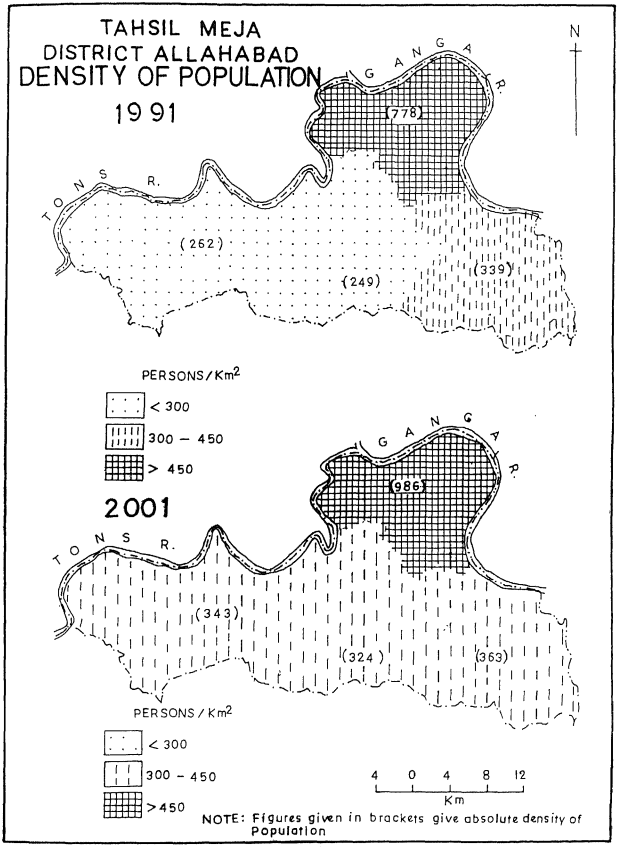

TAHSIL MEJA
DISTRICT ALLAHABAD
DENSITY OF POPULATION
1991
N
GANGA R.
TONS R.
(778)
(262)
(249)
(339)
PERSONS/Km²
< 300
300 – 450
> 450
2001
(986)
(343)
(324)
(363)
4 0 4 8 12
Km
NOTE: Figures given in brackets give absolute density of Population

Fig. 2·8

Uruwa Block is most densely populated. It had 644 persons/km^2 in 1981 against the average density of 522 persons/km^2 in Allahabad District. It has steadily increased its density of population to 778 persons/km^2 (1991) to 986 persons/ km^2 (2001) (Fig. 2.8). The main factors contributing to its high density are level topography, fertile, alluvial soils, net sown area being nearly 70 % of the total reporting area of which more than 53% area is irrigated and its index of cropping intensity* is 143.80%. It also has a well developed transport network and an urban centre (Sirsa).

The remaining three blocks have much lower densities of population much lower than the Tahsil average 496 persons/km^2 against that of Allahabad District (911 persons/km^2) and Uttar Pradesh (689 persons/ km^2). Among them Manda has recorded higher densities [1981 - 260; 1991 = 339 and 2001 = 363] which has better transport facilities as well as an urban centre (Bharatganj). Most parts of these three blocks lie in the Vindhyan Upland characterised by rocky undulating terrain and poor infertile soils with net area around 50% and inadequate irrigation facilities and other infrastructural facilities for habitations. These conditions have not favoured dense settlement. The ravined topography of the Tons has acted as a negative factor in certain parts of Meja and Uruwa Blocks.

2.9.3 Rural-Urban Composition

Meja Tahsil is essentially rural in character as 90.70% of its population resides in rural settlements. Its level of urbanisation (9.30 per cent) is far less than the district average of 20.37 per cent (Fig. 2.9). It certainly reflects its low level of

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* The Index of cropping intensity[13] is calculated as follows

$$CI = \frac{G.C.A.}{N.C.A.} \times 100 = \frac{17,398}{12,098} = 143.80$$

Where C.I. = Index of cropping intensity.

G.C.A = Gross Cropped Area

N.C.A. = Net Cropped Area

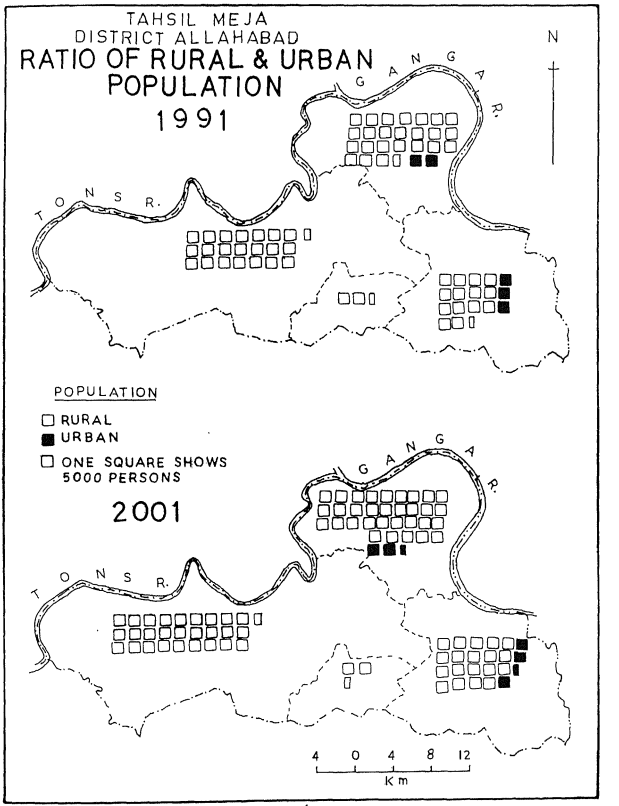

TAHSIL MEJA
DISTRICT ALLAHABAD
RATIO OF RURAL & URBAN POPULATION
1991
N
G A N G A R.
T O N S R.
POPULATION
RURAL
URBAN
ONE SQUARE SHOWS 5000 PERSONS
2001
G A N G A R.
T O N S R.
4 0 4 8 12
Km

Fig.2·9

socio-economic development. There are only two towns: Sirsa (Uruwa Block) and Bharatganj (Manda Blocks) whose population is given in Table 2.4. The blocks of Meja and Koraon have no urban centre.

2.9.4 Sex Ratio

The sex ratio is an important demographic parameter for it determines reproductive potential, marital status, work force and dependency ratio[14]. It

Table 2.4

Rural-Urban Composition of Population in Meja Tahsil

Name of Block	1991		2001	
	Rural Population	Urban Population	Rural Population	Urban Population
1. Uruwa	1,22,456	8,929	1,59,637	11,161
2. Meja	1,06,755	-	1,39,905	-
3. Koraon	10,731	-	13,950	-
4. Manda	72,021	12,465	94,325	16,204
Total Tahsil	3,72,498	21,394	4,07,067	27,365

Source: Census Uttar Pradesh (1991 and 2002)

also influences the requirements for various goods and services for which planning is necessary for improving the quality of life and living conditions.

The Study Area has a population of 4,34,372 persons (2001), of which males are 2,30,686 and females 2,03,692. Hence, its sex-ratio is 883 females per 1,000 males against 882 females per 1,000 males in Allahabad District but it varies from block to block (vide Table 2.5). Koraon Block has the highest sex ratio (951) and is followed by Uruwa (906), Manda (897) and Meja (870) (Vide Fig. 2.11 A). Incidentally Koraon Block has the largest segment of the scheduled castes and scheduled tribes population and is also wholly rural in character[15]. (vide Fig. 2.10).

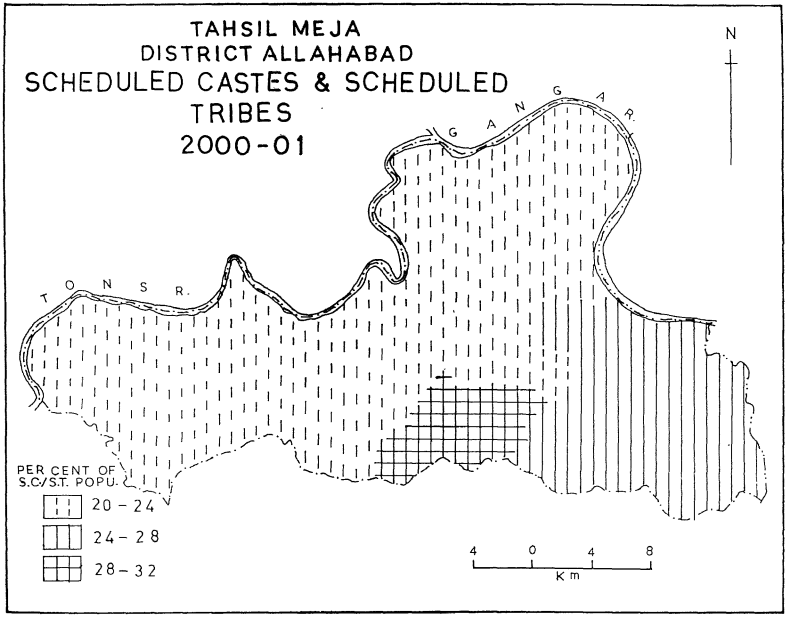

TAHSIL MEJA
DISTRICT ALLAHABAD
SCHEDULED CASTES & SCHEDULED TRIBES
2000-01
N
G A N G A R.
T O N S R.
PER CENT OF S.C/S.T. POPU.
20 - 24
24 - 28
28 - 32
4 0 4 8
K m

Fig. 2.10

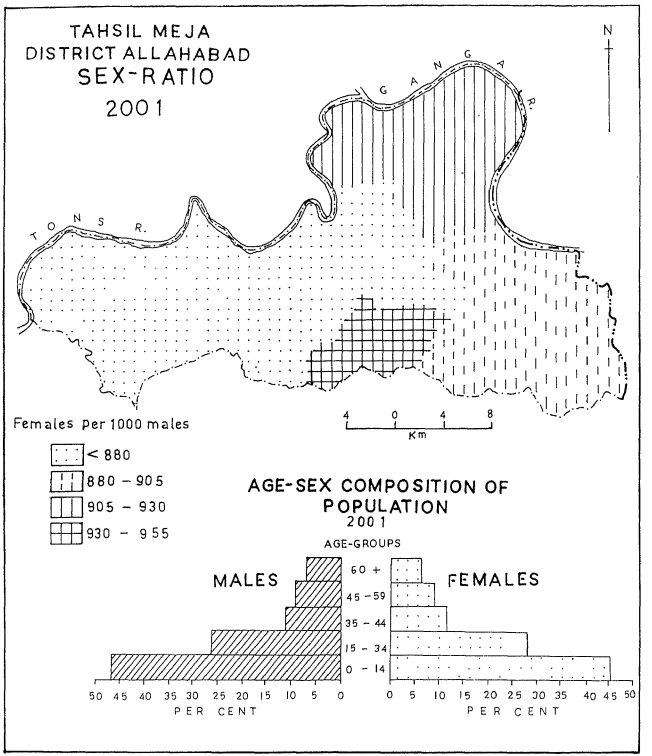

TAHSIL MEJA
DISTRICT ALLAHABAD
SEX-RATIO
2001
N
G A N G A R.
T O N S R.
Females per 1000 males
< 880
880 – 905
905 – 930
930 – 955
4 0 4 8
Km
AGE-SEX COMPOSITION OF POPULATION
2001
AGE-GROUPS
MALES
FEMALES
60 +
45 – 59
35 – 44
15 – 34
0 – 14
50 45 40 35 30 25 20 15 10 5 0
PER CENT
0 5 10 15 20 25 30 35 40 45 50
PER CENT

Fig. 2·11

Table 2.5

Sex-ratio of Meja Tahsil (2001)

Name of Block	Male	Female	Total	Sex Ratio	Percentage of S.C. Population
1. Uruwa	83,745	75,892	1,59,637	906	23.1
2. Meja	74,739	65,166	1,35,905	870	23.2
3. Koraon	7,803	6,147	13,950	951	29.6
4. Manda	49,709	44,626	94,325	897	24.9
Total Tahsil	2,30,686	2,03,692	4,34,372	883	24.4

Source: Census of India, Uttar Pradesh (2001)

Table 2.6 gives the age-sex structure of Tahsil Meja (2001). It has been calculated on the basis of the data for age-sex structure of District Allahabad available for the 1991 census.

Although the sex ratio for the region for all age-groups is 883 females per 1,000 males, there are perceptible variations according to age-groups by their percentage share (vide Table 2.6) (Fig. 2.11 B). It highlights the high percentage of children (0-14): males 46.25% and females 45.18%. It is a typical feature of the developing countries. The most reproductive age group (15-34) accounts for 26.22% (males) and 28.35% (females), which must be targeted for family planning programmes. The share of male adult population (35-59) is 20.44% (males) and 20.26% (females), which includes women, who are not in reproductive age group (45-59). The population of the elderly people is 7.09 (males) and 6.21 (females). The proportion of the children and the elderly people is inversely related, but both together constitute the dependent population: male (46.25 + 7.09 = 53.24) and females (45.18 + 6.21 = 51.39%) which gives high dependency ratio, which is a cause for concern for man power planners

Table 2.6

Age-sex structure of Tahsil Meja (2001)

Age-group (years)	Percent of Total Male Population	Percent of Total Female Population
0-14 (Young children)	46.25	45-18
15-34	26.22	28-35
35-44	11.13	11.23
45-59	9.31	9.03
60* (Elderly)	7.09	6.21
All Age Groups (Percent)	100.00	100.00
Population	2,30,686	2,30,692

Source: Census of India, Uttar Pradesh (2001)

$$\text{[Dependency Ratio = Total Population of Children (0-14) + total population of elderly people (60 +)]} \over \text{Total Adult Population (15-59)} \times 100$$

[Since all adult population (15-59) is not economically active, the population of total workers should be taken as denominator for calculating dependency ratio]

2.9.5 Literacy

Literacy is a very important indicator of socio-economic development[16] and has direct bearing on the extension of development technology. Unfortunately the literacy level of Meja Tahsil is very low (36.01, male - 65.4 and female - 14.2) (vide table 2.7). Uruwa Block holds the first rank (46.2%), followed by Manda (38.5%), Meja (35.9 percent) and Koraon (29.9 percent) (Fig. 2.12). Uruwa Block has the best schooling facilities and has a degree college at Sirsa. Manda Block also has better educational facilities and has a town (Bharatganj). The male female

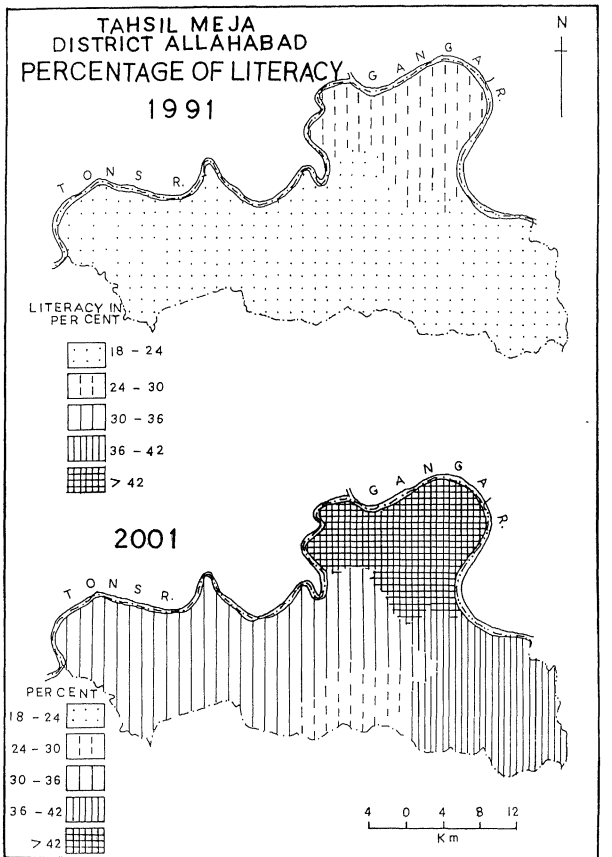

TAHSIL MEJA
DISTRICT ALLAHABAD
PERCENTAGE OF LITERACY
1991
N
G A N G A R
T O N S R
LITERACY IN PER CENT
18 - 24
24 - 30
30 - 36
36 - 42
> 42
2001
G A N G A R
T O N S R.
PER CENT
18 - 24
24 - 30
30 - 36
36 - 42
> 42
4 0 4 8 12
Km

Fig. 2·12

differentials are worrisome as male literacy varies from 70.7 per cent (Uruwa) to 46.6 per cent (Koraon) (Fig. 2.12) , while female literacy varies from 18.9 percent (Uruwa) to 10.2 per cent (Koraon) (Fig.2.13). A comparative analysis for 1991 and 2001 for Meja Tahsil shows percentage increase in female literacy, which varied from 4.2% (Koraon) to 12.6% (Uruwa) and the male/female differential in literacy by 3.2. In fact, the problem of literacy is very acute, which has been accentuated by the deplorably low female literacy. "Rural-Urban differentials in literacy emanates from the differences in the type of economy, degree of concentration of educational institutions, status granted to female, and migratory pattern of the two areas".[17] The caste system, social attitudes and female prejudices also matter in female rural literacy.

The concept of Physical Quality of Life Index (PQLI) developed by Morris and McAlphin[18] addressed to three basic needs of the poorest people, viz., infant mortality, life expectancy and basic literacy, which the policy makers must improve for their benefit.

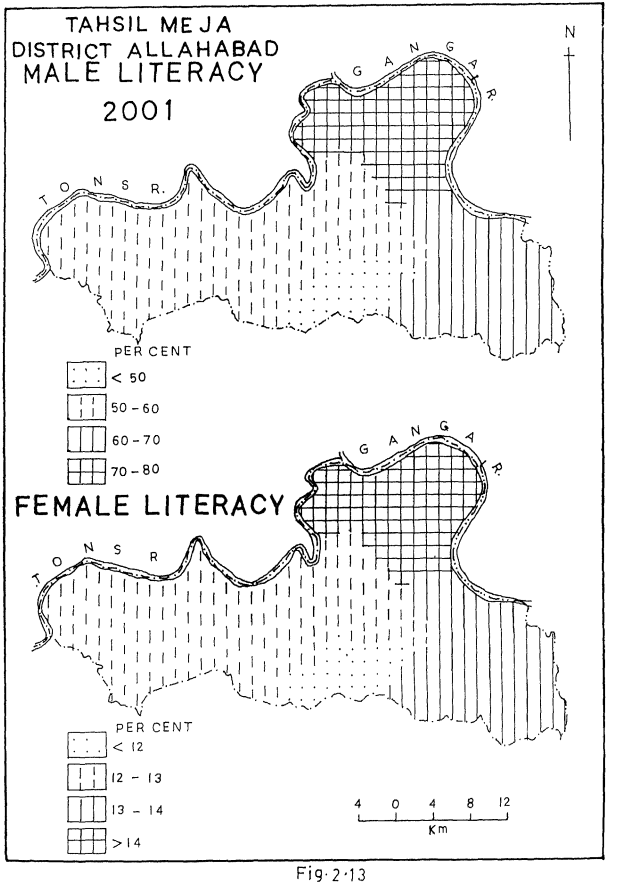
Table 2.7
Literacy Levels in Meja Tahsil (2001)

Name of Block	Percentage		
	Male	Female	Total
1. Uruwa	70.7	18.9	46.2
2. Meja	55.5	12.9	35.9
3. Koraon	46.6	10.2	29.9
4. Manda	60.4	13.7	38.5
Total Tahsil	65.4	14.2	36.01

Source: Census of India, Uttar Pradesh (2001)

2.9.6 Occupational Structure

The working force constitutes 32.3 per cent of the total population of Meja Tahsil, but it varies Uruwa (28.1%), Meja (32.1%), Koraon (38.5%) and manda (31.0%).


TAHSIL MEJA
DISTRICT ALLAHABAD
MALE LITERACY
2001
N
G A N G A R
T O N S R.
PER CENT
< 50
50 - 60
60 - 70
70 - 80
FEMALE LITERACY
G A N G A R
T O N S R
PER CENT
< 12
12 - 13
13 - 14
> 14
4 0 4 8 12
Km

Fig·2·13

78.2 per cent of the total main-workers are engaged in agriculture while the claim of household industries is barely 4.0 per cent. But there are wide spatial variations in household industrial workers (vide Table 2.8).

The highest percentage of agricultural workers (cultivators + agricultural labourers) is in Koraon Block (92.3 per cent: cultivators - 64.4% and agricultural labourers - 27.8%), followed by Meja (83.6%), Manda (78.4%) and Uruwa (74.8%). The highest proportion of agricultural labourers is in Koraon Block and the lowest proportion in Manda Block. Manda Block has the highest percentage of household industrial workers (4.5%) and is followed by Uruwa (4.0%), each of which has an

Table 2.8

Occupational Structure of Meja Tahsil

Name of Block	Total workers (%)	Agricultural workers		House hold / Industrial workers	Other workers
		Cultivators	Agricultural Labourers		
1. Uruwa	28.1	54.2	20.6	4.0	21.2
2. Meja	32.1	63.4	20.2	2.5	13.9
3. Koraon	38.5	64.4	27.8	1.4	6.3
4. Manda	31.0	66.9	11.5	4.5	17.1
Total Tahsil	32.3	60.6	17.6	4.0	17.8

Source: District Statistical Bulletin, Allahabad, 2002

urban centre which provides greater opportunity for household industrial workers (Fig. 2.14).

Other workers include those engaged in trade and commerce, transport, storage, communication and construction, services, primary activities like animal husbandry and quarrying, etc.. The highest percentage of other workers is found in

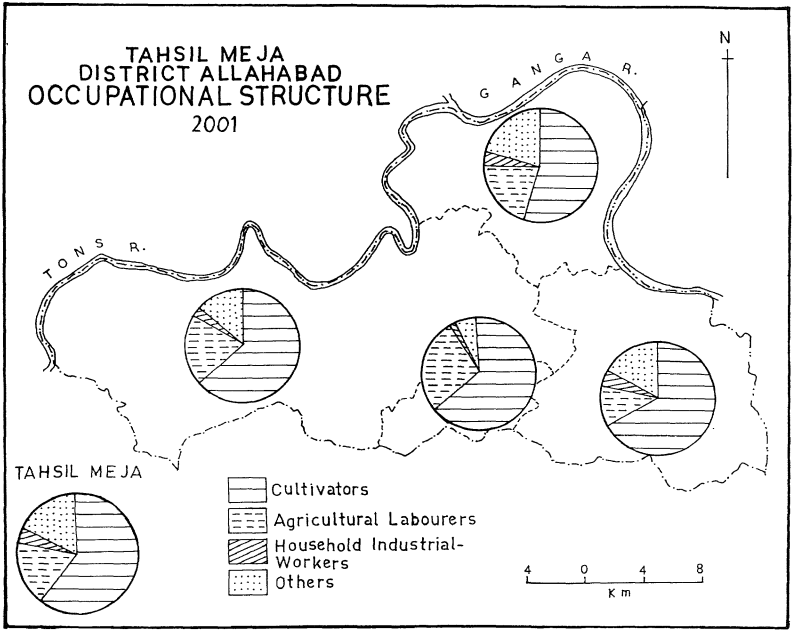

TAHSIL MEJA
DISTRICT ALLAHABAD
OCCUPATIONAL STRUCTURE
2001
N
G A N G A R.
T O N S R.
TAHSIL MEJA
Cultivators
Agricultural Labourers
Household Industrial-Workers
Others
4 0 4 8
K m

Fig 2.14

Uruwa Block (21.2%) followed by Manda (17.1%) and Meja (13.9%). Meja, Manda and Koraon Blocks have about 483 workers engaged in quarrying. There is an urgent need, to encourage cottage and village industries for diversification of regional economy and for reducing the increasing pressure on agriculture.

2.10 Settlements

Settlements are the principal human foci of a region and reflect a profound correlation between physical and cultural factors[19]. As settlements have gradually grown up and evolved over a long, period of time, their spatial pattern reveals the history of colonization and exploitation of the regional resources.

(a) Rural Settlements

The Study Area is predominantly rural in character with 90.70 percentage of population residing in 395 villages of varying sizes, of which Meja Block carries 144 villages, followed by Uruwa (120) Manda (120) and Koraon (11). But the proportion of different sizes of villages varies from block to block (vide Table 2.9), (Fig. 2.15).

In general the large number of villages (146) are small in size (below 500 population), while the number of medium sized villages (500-999) is 129. The number of villages in large size progressively decreases from 84 (1,000-1, 999) to 31 (2,000-4,999) and to 5 (above 5,000 population). But there are block-wise variations: Uruwa Block has the smallest number of small villages (26), but has more medium sized villages and 3 large sized villages with population more than 5,000, whereas other blocks have more small sized villages and less medium sized and large sized villages. Each of Meja Block and Manda Block has one large village (+5,000) while Koraon has none.

The region as a whole, barring Uruwa Block, is sparsely populated with dispersed type of compact and semi-compact settlements in the fertile valleys and flat upland. Both the type and pattern of settlements exhibit the dominant control of terrain in

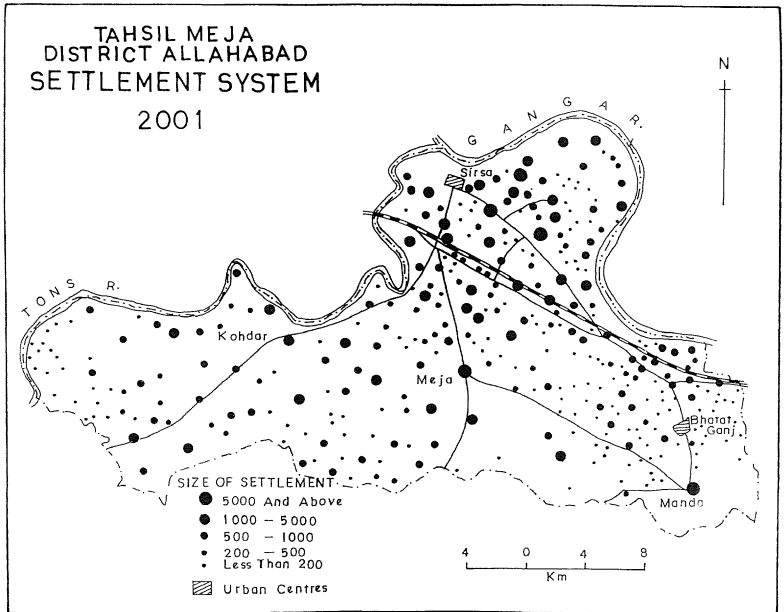

TAHSIL MEJA
DISTRICT ALLAHABAD
SETTLEMENT SYSTEM
2001
N
G A N G A R.
Sirsa
T O N S R.
Kohdar
Meja
Bharat Ganj
Manda
SIZE OF SETTLEMENT
5000 And Above
1000 – 5000
500 – 1000
200 – 500
Less Than 200
Urban Centres
4 0 4 8
Km

Fig. 2.15

Table 2.9

Sizes of Villages in Tahsil Meja (2001)

Name of Block	<200	200-499	500-999	2000-4999	5000 and above	Total
1. Uruwa	03	23	48	35	03	120
2. Meja	24	35	44	27	01	144
3. Koraon	02	02	02	03	00	011
4. Manda	24	33	35	19	01	120
Total Tahsil	53	93	129	84	05	395

Source: District Statistical Bulletin, Allahabad, 2001

consonance with soil, hydrography, vegetal cover and the nature of general development. The factors of dispersal are dominant all over: the Khadar and undulating upland punctuated with outcrops and circum-erosional hills, with varying soils (alluvium and black infertile soils) and forests. The Tons Basin provides the most favourable conditions for dense settlement and compact settlements. Extensive ridge tops like Manda Hills also attract compact settlements, particularly as a legacy of the past for defence needs. In the upland the extent of compactness and size of settlements vary greatly as the cultivated land is limited and patchy but medium sized hamlets and semi-sprinkled settlements are noticeable where there is assured irrigation facility like a stream or a canal or an artificial tank where rainy water has been stored.

(b) Urban Settlements

There are only two urban centres: Sirsa (Uruwa Block) and Bharatganj (Manda Block) (Fig. 2.15).

Sirsa

Sirsa (25° 16' N Lat. and 82° 6' E long) is situated above the confluence of the Tons and the Ganga and lies at a distance of 43 km from Allahabad. It is well connected with Allahabad and Mirzapur by the road and the railway. The nearest railway station is Meja Road, about 5 km. away from the town on the Allahabad-Mughalsarai Railway. Before the advent of the railway, it was a flourishing market centre[20] and municipality as early as 1870 which was abolished in 1873 and was reduced to the status of a town area. At present, it is a town area and houses the headquarters of Uruwa Block. It remained a stagnant town for long, but enhanced its urban status with the establishment of a degree college and a Telephone Exchange so that by 1991 it had a population of 9,929 which rose to 11,161 in 2001. Recently, its urban area has been extended over 10 more villages. It has developed a typical ribbon pattern of urbanscape in response to the land use conflict in the rural-urban fringe[21].

Bharatganj

Bharatganj (25° 1' N Lat. and 82° 16' E Long) is a nodal centre in the contact zone of the Ganga Plain and the Vindhyan Plateau which has determined its site and location[22]. Its nodality rests on the convergence of the roads leading to Allahabad, Mirzapur, Manda, Koraon and Meja. It is the largest town of the region with a population of 16,204, which has grown at a faster rate since 1981 (1981:9,041; 1991 : 12,465). Recently 10 more villages have been included in its urban area. It has continued as a town since 1867. It is an important market centre and has other infrastructural facilities like Telephone Exchange, banks, and bus station.

2.11 Transport and Communication

Transport and communication facilities are sine qua non for regional development for they enhance its dynamism and mobility by providing and strengthening spatial linkages in its spatio-functional organisation[23]. They determine

flows of commodities, people and information. It serves both the short-term function of satisfying the demand for movement between areas and long-term function of helping the growth of places by inducing changes in comparative advantage as a result of changes in accessibility and relative location[24]. In fact, their network is an index of the regional socio-economic development for they influence the growth of productive opportunities, utilization of the regional potential and future needs of the economy and society. They promote balanced regional development by removing disparities in resource utilization and elimination of poverty, deprivation, exploitation and contribute to sustainable spatial development.

(a) Transport Network

The regional transport network is constituted by roads and railways (Fig. 2.16). Water transport is conspicuous by its absence as the Tons is not suitable for navigation purposes, but the National Ganga Waterway connecting Allahabad and Haldia,when operational, may revive the fortunes of Sirsa which lies in the close proximity of the confluence of the Tons and the Ganga.

Roads

The region has no integrated road network. It shares a portion of the G.T. Road. National Highway joining Allahabad and Mirzapur which covers a length of 57.6 km. in District Allahabad. Other state metalled roads connect Sirsa, Bharatganj, Manda, Meja and Koraon (PLATE 8,A). The blockwise distribution of metalled roads and those maintained by the P.W.D. is given in Table 2.10.

The road network including metalled roads and all fair weather roads is 345 km. for an area of 874.6 km^2 , which works out to be 39.44 km per 100 km^2 for the whole region but, there are wide variations ranging from 29km (Meja Block) to 30 km (Manda Block), 69 km (Uruwa Block) and 101 km (Koraon). Koraon Block has an area of 43.1 km^2 and is traversed by two roads (Meja-Koraon and Manda-Koraon). In fact Uruwa Block has the densest network of roads. It corroborates the

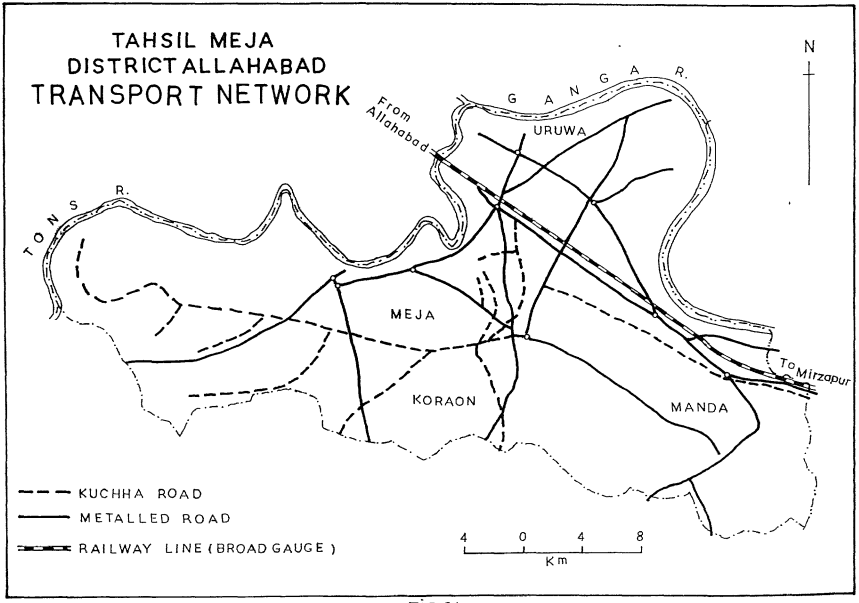

TAHSIL MEJA
DISTRICT ALLAHABAD
TRANSPORT NETWORK
N
G A N G A R.
From Allahabad
URUWA
T O N S R.
MEJA
KORAON
MANDA
To Mirzapur
KUCHHA ROAD
METALLED ROAD
RAILWAY LINE (BROAD GAUGE)
4 0 4 8
Km

Fig. 2.16

(A) LINK ROAD TO SIRSA TOWN

(B) MEJA ROAD RAILWAY STATION

PLATE NO-8

observation that "economic activities and the development of transportational facilities go hand in hand".

Table 2.10

Road Network (km) in Meja Tahsil

Name of Block	1990 - 1991			2000 - 2001		
	Metalled Roads	Maintained by PWD	All fair weather Roads	Metalled Roads	Maintained by PWD	All fair weather Roads
1. Uruwa	79	79	42	91	91	46
2. Meja	91	91	28	103	103	41
3. Koraon	08	08	30	09	09	09
4. Manda	41	41	26	55	55	32
Total Tahsil	219	219	126	258	258	149

Source: District Statistical Bulletin, Allahabad, 1990 and 2000.

Other parts of the region are served by unmetalled district and village roads, which connect villages having more than 1,000 persons and measure about 149 km. Here too, Meja Block is most poorly served. It also implies that only 120 villages are served by district roads and the remainder of 275 villages are just connected by cart tracks, which are impassable during the rainy season. Table 2.10 reveals the progress of road network during 1990-91 and 2000-2001. It is distressing to note that during a decade only 39 km of metalled roads and 23 km of district roads have been added. They also suffer from neglect as their repair work is inordinately delayed. It is, therefore, urgently required that there should be an extended and integrated road network joining all villages having population more than 500 persons by all fair weather roads, which should be linked with state high ways and district roads.

Railways

The history and development of the railways in Allahabad District dates back to 1859, when the East Indian Railways was constructed. But Allahabad was linked to Mughalsarai in 1865 when the Yamuna Railway Bridge was opened to traffic. It is now under the administrative control of the Northern Railways. A part of the Allahabad Mughalsarai Railway measuring about 27 km passes through the north-eastern part of the region with the stations of Manda Road, Unchadih and Meja Road (PLATE 8 B) and enters Karchhana, Tahsil via the railway bridge on the Tons (Vide PLATE 2 A).

(b) Communication System

The communication system comprises of post offices and telegraph offices, telecommunication system, broadcasting and television and information services. The communication system is essential not only for trade and commerce, but also for accelerating socio-economic development and motivating people for social progress. In fact, it has acquired a cardinal position in the very process of development and its spatial diffusion and has become a catalyst for modernization.

Table 2.11 gives the block-wise progress of the means of communications during 1990-91 and 2000-01.

It is clear from the Table 2.11 & (Fig. 2.17) that during the decade 1990-91 and 2000-2001, only 4 new post offices, one each in Uruwa Block and Manda Block and 2 in Meja Block have been opened, whereas the position of telegraph offices remains static. It is a natural corollary of the development of telecommunication facilities which have lightened the work of post-offices and telegraph offices. There has bee phenomenal rise in telecommunication services, which have been extended to some gram panchayats as well. At present there are five Telephone Exchanges at Sirsa, Bharatganj, Meja, Manda Road and Unchadeeh. In fact the National Telecommunication Policy envisages to link all gram panchayats by telephone network and allow opening of the PCOs on demand at rural market centres. (Fig. 2.18) (PLATE 9 A). It has opened new opportunities for employment.

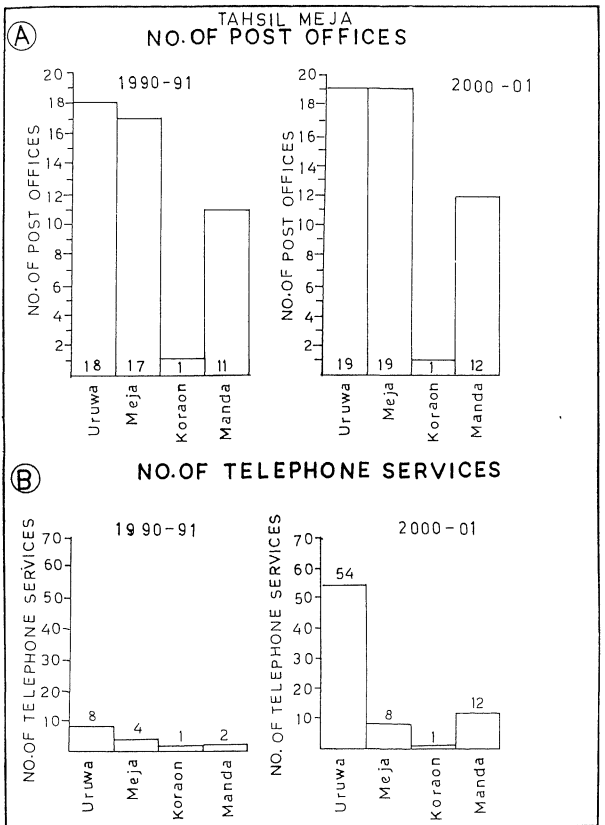

TAHSIL MEJA
A
NO.OF POST OFFICES
1990-91
2000-01
NO.OF POST OFFICES
20
18
16
14
12
10
8
6
4
2
18
17
1
11
19
19
1
12
Uruwa
Meja
Koraon
Manda
B
NO.OF TELEPHONE SERVICES
1990-91
2000-01
NO.OF TELEPHONE SERVICES
70
60
50
40
30
20
10
8
4
1
2
54
8
1
12

Fig. 2.17

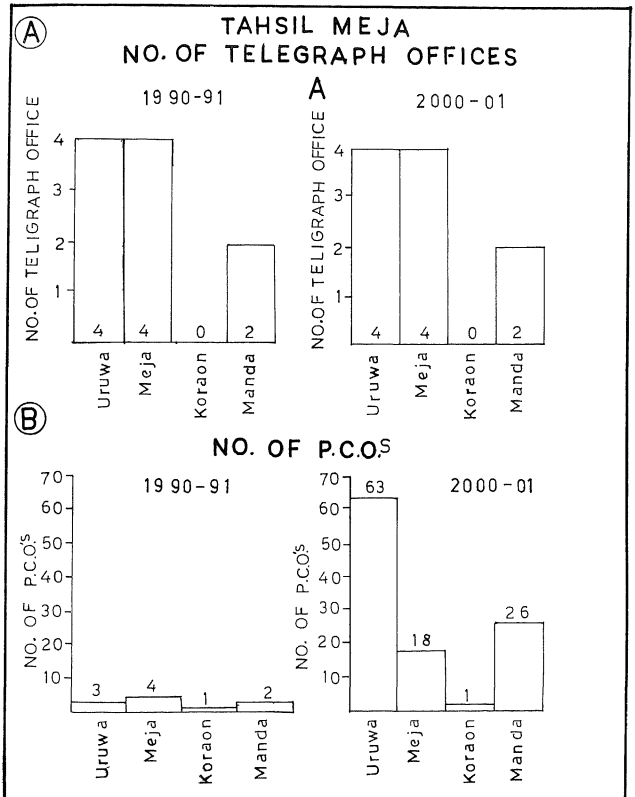
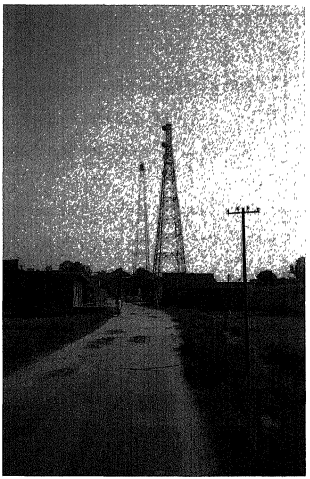

A
TAHSIL MEJA
NO. OF TELEGRAPH OFFICES
1990-91
2000-01
NO.OF TELIGRAPH OFFICE
4
3
2
1
4
4
0
2
Uruwa
Meja
Koraon
Manda
B
NO. OF P.C.O.S
1990-91
2000-01
NO. OF P.C.O.'S
70
60
50
40
30
20
10
3
4
1
2
63
18
1
26
Uruwa
Meja
Koraon
Manda

Fig. 2·18

(A) TELEPHONE EXCHANGE - MANDA ROAD



(B) T.V. TOWER IN URUWA BLOCK

PLATE NO - 9

Table 2.11

Progress of Means of Communications in Meja Tahsil during 1990-91 and 2000-2001

Name of Block	Post Offices	Telegraph Offices	Telephone Services	No. of PCOs
1. Uruwa	(a) 18	04	08	03
	(b) 19	04	54	63
2. Meja	(a) 17	04	04	04
	(b) 19	04	08	18
3. Koraon	(a) 01	00	01	01
	(b) 01	00	01	01
4. Manda	(a) 11	02	02	02
	(b) 12	02	12	26
Total Tahsil	(a) 47	10	15	10
	(b) 51	10	65	108

Source: District Statistical Bulletin, 1990 and 2000.

Name: (a) refers to data for 1990-1991

(b) refers to data for 2000-2001

The Tahsil is served by the AIR and TV Centres at Allahabad. The survey reveals increasing demand for transistors, radios and TV sets (PLATE 9 B).

The telecom infrastructure and telecom services are surely encouraging faster growth in subscribers, investments, traffic and revenue.

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CHAPTER – 3

IDENTIFICATION OF BASIC UNITS FOR SPATIAL PLANNING

3.1. Introduction

As the main focus of the study is the balanced regional development of the Study Area, its strategy centers round the optimum utilization of its resources for economic development and social well-being of the people. Development can be effective and efficient only when spatio-functional sub-systems work in unison and bring about a harmonious blending of the evolving economic system, social structure and spatial organisation. Academician Gerasimov has rightly observed: "The main task of modern geography is to provide the scientific backup for mankind's titanic efforts in all round rational use of natural resources, and purposeful protection and transformation (planning and change) of the environment for the further development of social production and improvement of the living conditions of the population"[1].

As all growth processes and their consequences occur in space, spatial planning is the viable strategy for balanced socio-economic development. It studies the spatial organisation in depth and attempts to identify spatial gaps and rectifies the regional socio-economic imbalances and builds spatial structures which can ensure "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"[2].

3.2 Concept of Planning Units

In a spatial development plan, the identification of basic planning units forms its integral part. The level of functional relationships of the community is well reflected in the settlement system, which is "a spatial framework of the socio-economic activities"[3]. A settlement system comprises many foci, varying from a rural hamlet to a central village/service centre and a town which differ in their functional capacity to serve socio-economic requirements of the community. A centre with higher order functions like a degree college, a hospital, a post and

telegraph office, etc. can serve a large community occupying more physical space It implies that a higher order centre has a larger service area, whereas a smaller centre with few central functions like a primary school serves a smaller area. This hierarchical order of service centers at appropriate and selective locations can help in the balanced development of the region[4]. The identification of growth foci is a step in search of appropriate locations. Therefore, the identification of Central place systems and processes constitutes a significant steps in spatial planning and development[5].

Due to their central locational nature, the growth foci act as catalyst of development. The field enquiries reveal that Sirsa, Bharatganj, Meja and Koraon etc. offer better information about developmental activities than smaller villages lying in the remote areas of the Vindhyan upland. Accordingly these growth/development foci may be used as "effective tools" for economic and social transformation and development of the Study Area[6].

The level of functional interaction between service centres and their service areas determines the pattern of spatial organisation of human activities over space. The more uniform the distribution of the service centres, the more efficient spatial organisation of human activities. Hence the identification of planning units – the service centre/growth foci and their service/tributary areas, is a significant step in spatial planning. However, the process of identification of spatial planning units faces several difficulties:

(1) There is no correspondence between the spatio-functional hierarchy and the administrative hierarchy (district, tahsil, block) which is an enforcement by the Government on people.

(2) Non-availability of data relating to various factors of production, markets and motivational forces considerably hinder the process of identification.

(3) It is an arduous task as the identification of the service centres involves the investigation of all settlements and all types of central functions for which official data are not available.[7]

(4) The existing pattern of service centers in the region is a result of the forces of history and culture on the one hand and of economic and political expediency on the other.[8]

(5) The information about the settlements and their functional structure, as available in various documents is not compatible.

(6) Similarly the relevant data about the commodity flows and consumers' behaviour and their authentic maps, which form the backbone of the regional settlement system are conspicuous by their absence.

These constraints have posed serious challenges in identification of the spatio-functional units. However, efforts have been made to overcome these difficulties by field investigations relating to central functions and services available at important centres and consumers' behaviour. On the basis of approximate connectivity indices of service centres and their service areas/complementary areas have been delineated and an optimal locational network of potential service centers of the Study Area has been worked out.

3.3 Central Functions and Services

Central functions are essentially basic functions, which a service centre performs in response to the needs and requirements of the service area/tributary area. L.S. Bhatt observes that all functions which are, in some way or the other, concerned to the government for their development should be recognized as central functions[9]. But V.L.S. Prakasa Rao suggests[10] that central functions should not be identified on the static basis of rarity or ubiquity, but also on the dynamic ground of producers' and consumers' preferences. The range of central functions depends on the socio-economic development of the region. For example, a primary school, a grocery shop, a cycle repair shop and the likes may be treated as central functions

for an economically backward area, but are quite ubiquitous in an economically developed area.

3.4 Hierarchy of Central Functions

The hierarchy of central functions depends on their spatial ranges and thresholds of population. The lower order central functions serve limited area as well as population, whereas the higher order central functions have much wider service areas and beneficiary population. For example, a basic junior school (primary school), a basic senior school (middle school), a higher secondary school (an intermediate college), a degree college and a university provide an ascending order of functional hierarchy of educational facilities: their service/tributary areas as well as population thresholds vary. Incidentally, their numbers go on decreasing as their functional status goes up. A primary school may be established in a village with a population of 500 persons, but a degree college maybe set up with the threshold population of a town with a population of 10,000 + persons. Sirsa Town of the Study Area has a population of 11,161 and has a degree college with 817 students, while Bharatganj (population 16,204) has no degree college yet.

Accordingly the hierarchy of central functions has been determined on the basis of their relative importance and population thresholds of functions. Since there are many physico-cultural factors, which influence the location of a function, an exact limit of population threshold is not easy to define. It may be better replaced by the concept of "entry zone" (425-1085) population zone for a junior basic school) -- at the upper limit of which all the settlements possess the function which they may lack at the lower level[11]. As the `entry zone' is not helpful for the quantitative analysis, the median of the `entry zone' (p.50) is taken into account. It reflects the size of the median centre above which the number of settlements lacking in the function is equal to the number of settlements possessing the same function below it. This technique has been used by A.V.K. Sharma and associates[12] as well as by R.B. Chaturvedi[13].

As the lowest level of central functions are highly ubiquitous and recur very frequently, it is desirable to eliminate such functions and select the more significant functions for the analysis as it helps in the speedy coverage of a wider universe.

With these considerations as well as feedback from the field survey the relevant functions (45) have been analysed for determining their functional hierarchy in the Study Area (vide Table 3.1) and correlation between Central Functions and median threshold is shown in (Vide Fig. 3.1).

TABLE 3.1

Hierarchy of Central Functions in Tahsil Meja

S.N.	Central Functions and Services	Entry Points	Saturation Points	Median Thresholds
I.	**Education**			
1	Junior Basic School	425	1,085	755
2	Senior Basic School	1,150	3,650	2,400
3	Higher Secondary School	4,250	10,500	7,375
4	Degree College	11,161	45,693	28,677
5	Polytechnic	10,500	26,500	18,500
II	**Health**			
6	Registered Clinic	650	1,850	1,250
7	Govt. Dispensary	2,500	6,500	4,500
8	P.H.C.	3,650	12,500	8,075
9	Hospital	12,600	25,400	19,000
10	Family Planning Centre	3,200	8,500	5,850
11	M.C.W.C.	3,200	8,500	5,850

III	**Transport**			
12	Bus stop	850	4,000	2,425
13	Bus Station	4,800	16,000	10,400
14	Bus Junction/Railway Station	18,500	4,800	33,250
IV	**Communications**			
15	Branch Post Office	1,200	5,600	3,400
16	Post Office	3,852	16,000	9,926
17	Post & Telegraph Office	5,600	25,000	15,300
18	P.C.O.	1,250	5,560	3,405
19	Telephone Exchange	1,36,000	1,36,000	1,36,000
V	**Credit and Bank**			
20	Agricultural Coop. Credit Society	1,560	6,400	3,980
21	Gramin Banks	2,500	10,000	6,225
22	Nationalised Bank (Br.)	4,500	20,000	12,250
VI	**Extension Services**			
23	Cooperative Seed Store	2,560	8,500	5,530
24	Agricultural Implements and Engineering Services	3,750	10,800	7,275
25	Veterinary Hospital	20,500	48,000	34,250
VII	**Trade & Commerce**			
26	Hat/Weekly Market	1,050	5,400	3,225

27	Bi-weekly Market	4,560	10,000	7,280
28	Retail Daily Market	10,500	15,400	13,025
VIII	**Administrative Services**			
29	Police Station	4,522	6,000	5,261
30	Block Head Quarters	3,442	6,000	4,721
31	Tahsil Head Quarters	5,400	18,000	11,720
IX	**Retail Services**			
32	Retail Cloth Store	3,240	5,000	3,620
33	Book & Stationery Shop	2,240	5,000	3,620
34	Hardware Shop	8,036	16,000	12,018
35	General Provision Store	2,240	5,000	3,620
36	Radio and Watch Repair Shop	2,750	5,000	3,875
37	Auto Repair Shop	2,700	5,000	3,850
38	Chemist & Druggist	2,240	5,000	3,620
39	Restaurant	5,600	15,000	10,300
40	Glassware & Pottery	6,600	16,000	10,800
41	Shoe Store	2,400	6,000	4,200
X	**Recreation**			
42	Cinema Hall	10,500	25,000	17,750
43	Public Library	10,500	25,000	17,750
XI	**Other Services**			
44	Petrol & Diesel Station	4,250	11,750	8,500
45	Cycle Shop	3,250	7,950	5,600

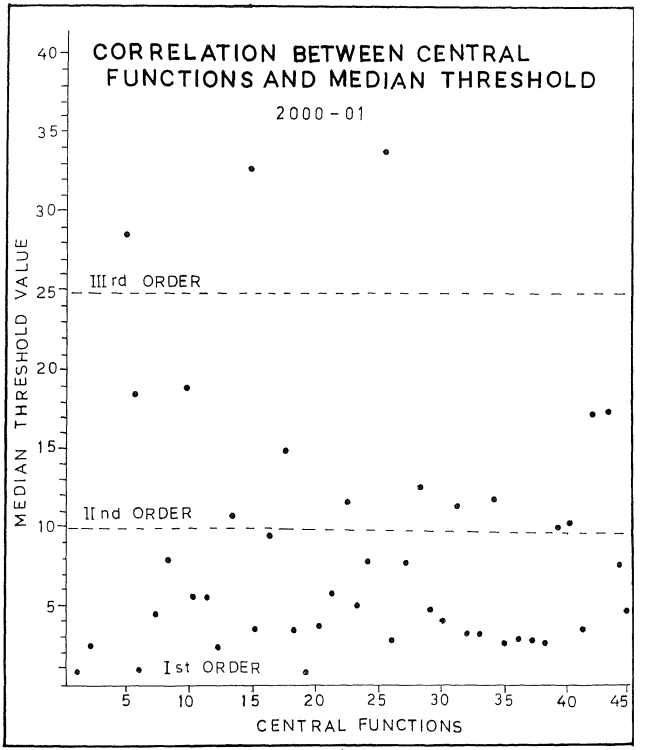

CORRELATION BETWEEN CENTRAL FUNCTIONS AND MEDIAN THRESHOLD
2000-01
MEDIAN THRESHOLD VALUE
CENTRAL FUNCTIONS
IIIrd ORDER
IInd ORDER
Ist ORDER
40
35
30
25
20
15
10
5
5
10
15
20
25
30
35
40
45

Fig. 3.1

Higher order functions and more specialized shops are limited to the two towns and large villages of the Study Area. It implies that there is a rank order in the central functions and services on the basis of their relative importance in the region. "A town is a point of specialized activity, which are best performed either at central accessible places or where a high order of population concentration is economically necessary"[14].

3.5 Consumers' Behaviour and Spatial Preferences

The functional hierarchy of the settlements depends on 'space preference' base. Space preference means the preference of the people for settlements for specific functions. The consumers' behaviour pattern and the spatial preference involves the process of locational decision making on the part of the regional populace and is indicative of the movement of people, goods and services at various levels of spatial hierarchy[15]. But the behavioural perceptions have different meanings for different people of different cultures or at different stages in the history of a particular culture.[16] D. Hawkins has rightly observed: "We link together our various perceptual spaces where contents vary from person to person and from time to time, as parts of our public spatio-temporal order"[17]

Schutz[18] claims that "only the already experienced is meaningful because meaning is an operation of intentionality'. He further holds that "although social actions are oriented to the future, they are executed within the framework which determines reflective retrospective glasses".

During the course of field work an attempt was made to ascertain consumers' behaviour and the spatial preference about various orders of central functions and services. The analysis of consumers' behaviour basically involved two fundamental elements, viz, the interaction of consumers with various settlements over the space and their demand for various functions and services. The former involves the cost-distance and time-distance (i.e. economic distance) in traveling from residence to a

particular central place, while the latter involves "the variety, quality and order of functions and services available in a settlement. These components determine to an appreciable extent, the behaviour of the consumers and their spatial preference for various orders of functions and services in the areas"[19].

As all central functions and services are not available at all settlements, the consumers have to move to those central places where their needs are met. The higher order functions are concentrated in only towns and large villages, whereas the lower order functions are ubiquitous. The intermediate functions are available in the middle order central places. The locational differences in the availability of various goods and services decide consumers' spatial preferences and their movements. In the structured questionnaire there was a question: "Where do people of the settlement normally go for marketing or other needs?". The reply was, considered as `space preference' of the particular village provided 60% or more people thereof avail the services from a particular centre. Such types of information was collected from the major settlements (towns and large villages) for determining the levels of functional hierarchy. The influence of higher order centres on consumers' behaviours and spatial preferences was higher. On the other hand, the influence of the lower order centres was limited. These enquiries helped in mapping the trend of people mobility through their choice of centres about functional needs.

The map (vide Fig. 3.2) shows the pattern of consumer trips and mobility patterns. When the researcher enquired from the students of Intermediate college, Meja, as to where they would go for higher studies. The dream destination of the majority of students was the Allahabad University, failing which a good degree college there, but quite a sizeable number opted for Sirsa Degree College on account of their economic constraints, social pressures and spatial proximity. In fact, for higher order central functions and specialized services, their spatial preference is Allahabad, which is also the headquarters of the district. But the people of the area normally meet their lower order and middle order needs from the

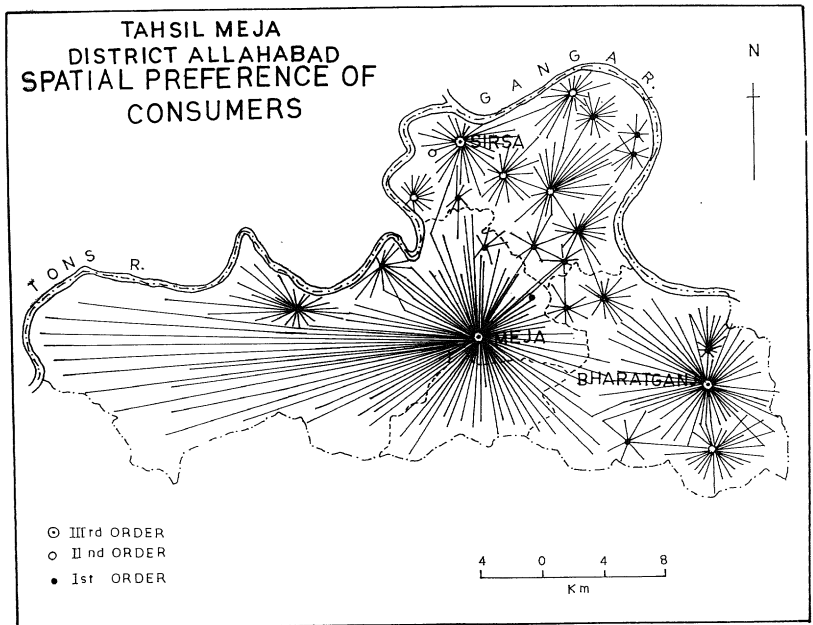

TAHSIL MEJA
DISTRICT ALLAHABAD
SPATIAL PREFERENCE OF
CONSUMERS
G A N G A R.
N
SIRSA
T O N S R.
MEJA
BHARATGANJ
III rd ORDER
II nd ORDER
1st ORDER
4 0 4 8
Km

Fig. 3·2

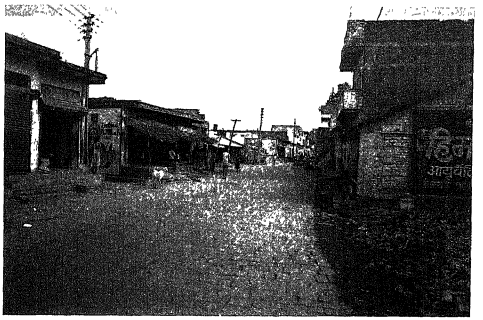
neighbouring centres lying in close proximity and their frequented destinations are Sirsa, Bharatganj, Meja, Koraon and other large service centres (PLATE 10A,B).

3.6 Identification of Central Places

The identification of central places/service centres is based on the functional status of various orders of settlements. Although the model of central places[20] was developed by Walter Christaller in 1933, it has been used as a spatial framework by August Losch[21], B.J.L. Berry[22], John E. Brush[23] and other scholars[24] with certain modifications and extended to include those centres, which would specifically promote rural development.[25]" Several attempts by the Indian scholars have been made for identification of central places/service centres, which provide functional linkages between urban centers and rural settlements.[26] The rural service centres, which mainly function at the lower level of central place hierarchy act as growth points in propagating new innovations.

In a settlement system, the functional importance of different centres varies in response to physico-cultural stimuli as well as constraints and gives rise to functional hierarchy of central places. According to K.N. Singh[27] "the hierarchal arrangement of service centres is based on the well-known notion that larger centres with greater variety of functions are more complex than the smaller ones with less functions." In fact the degree of importance of a central function varies with the frequency of its occurrence. But D. Bronger[28] has recommended that the number of units and institutions of various levels of functional hierarchy should be considered for identification of central places of developing countries.

The central places have been identified on the basis of functional characteristics and their centrality keeping in view the following criteria: (i) the settlement should have a population of 2,500 or more; (ii) at least 10 per cent (regional average) of the working population of the centre should be engaged in tertiary activities, and (iii) it should provide at least three central services/ functions.



(A) A VIEW OF BHARATGANJ TOWN (MANDA BLOCK)

(B) MARKET AREA OF SIRSA TOWN (URUWA BLOCK)

PLATE NO - 10

For measuring relative functional status of these central places Centrality Index (C.I.) and Population size Index (S.I.) have been computed with the help of the following equations.

$$1)\quad (C.I.) = \frac{P_{t1} - (P_1 \frac{Rt}{Rp})}{P_{t1} - \Sigma P \frac{Rt}{Rp}} \times 100$$

Where P_{t1} = Population of centre (1,2,3....n) engaged in tertiary activities

P_1 = Population of Centre 1

Rt = Regional tertiary population

Rp = Regional population

$$2)\ \text{Population size index (SI)} = \frac{P_1+P_2+ \ldots P_n}{\Sigma P} \times 100$$

P_1 = Population of Centre 1

P = Total Regional population

Besides 31 central functions have been awarded score values with respect to their occurrence and relative importance in the Study Area (vide Table 3.2) correlation between centrality score and central functions is depicted in (Fig. 3.3). Functionality Index of each centre has been calculated as follows:

(3) Functionality Index

$$(F.I.) = \frac{FW_1 + FW_2 \ldots FW_n}{\Sigma W} \times 100$$

where FW_1 = weightage of a function

W = weightage of all centres of the Study Area

Lastly, Composite Centrality Index (CCI) was obtained as follows:

(4) CCI = 0.5 (CI+FI)

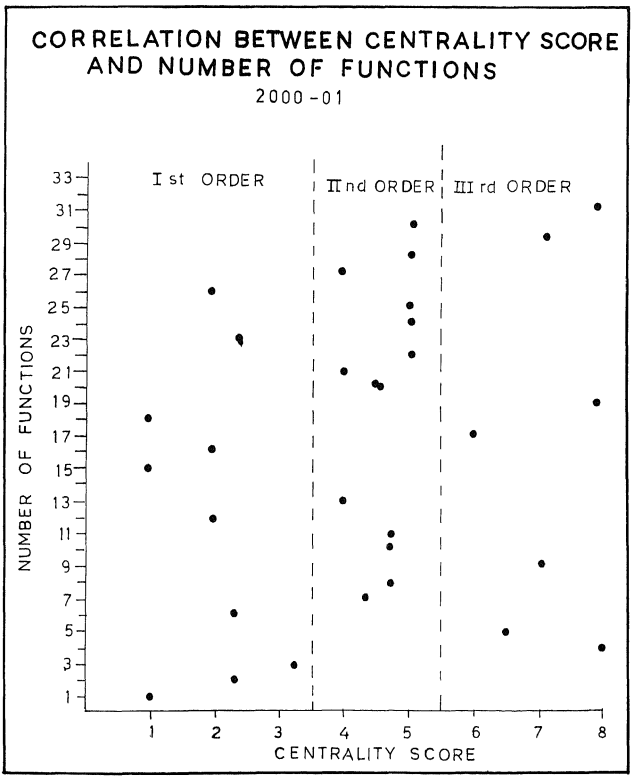

CORRELATION BETWEEN CENTRALITY SCORE AND NUMBER OF FUNCTIONS
2000-01
I st ORDER
II nd ORDER
III rd ORDER
NUMBER OF FUNCTIONS
CENTRALITY SCORE
33
31
29
27
25
23
21
19
17
15
13
11
9
7
5
3
1
1
2
3
4
5
6
7
8

Fig. 3.3

TABLE 3.2

CENTRAL FUNCTIONS AND THEIR SCORE VALUES IN MEJA TAHSIL

S.No.	Central Functions and Services	Occurrence in the Region	Score values
A.	**EDUCATION**		
1.	Junior Basic School	194	1.0
2.	Senior Basic School	76	2.3
3.	Higher Secondary School	26	3.2
4.	Degree College	.1	8.0
5.	Polytechnic	.1	6.5
B.	**Health**		
6.	Registered Clinic	46	1.5
7.	Govt. Dispensary	21	4.3
8.	P.H.C.	16	4.7
9.	Hospital	3	7
10.	Family Planning Centre	8	4.7
11.	M.C.W.C.	8	4.7
C.	**Transport**		
12.	Bus stop	20	2
13.	Bus station	7	4
14.	Bus Junction/Railway Station	6	6
D.	**Communications**		
15.	Branch P.O.	110	1
16.	Post Office	51	2
17.	Post & Telegraph Office	10	6
18.	P.C.O.	108	1
19.	Telephone Exchange	5	8

E.	**Credit and Banking**		
20.	Agr.Cooperative Credit Societies	23	4.6
21.	Gramin Bank	3	4.0
22.	Nationalised Bank	3	5.0
F.	**Extension Services**		
23.	Cooperative Seed stores	23	2.4
24.	Agriculture Implements and Engineering Services	6	5
25.	Veterinary Hospital	4	5
G.	**Trade and Commerce**		
26.	Hat/Weekly market	84	2
27.	Bi-weekly market	21	4
28.	Retail Daily market	3	5
H.	**Administrative Services**		
29.	Police Station	4	7
30.	Block Headquarters	3	5
31	Tahsil Headquarters	1	8

On the basis of the above formulas the CCI (Composite Centrality Index) for each Centre has been calculated (vide Table 3.3) and correlation between composite centrality Index and population size is depicted in Fig. 3.4.

The central places listed in Table 3.3 are of three orders: 3 third order centres (growth points); 6 second order centres (service centres) and 16 first order centres (central villages/market centres). Their distributional pattern is clear from Fig. 3.5.

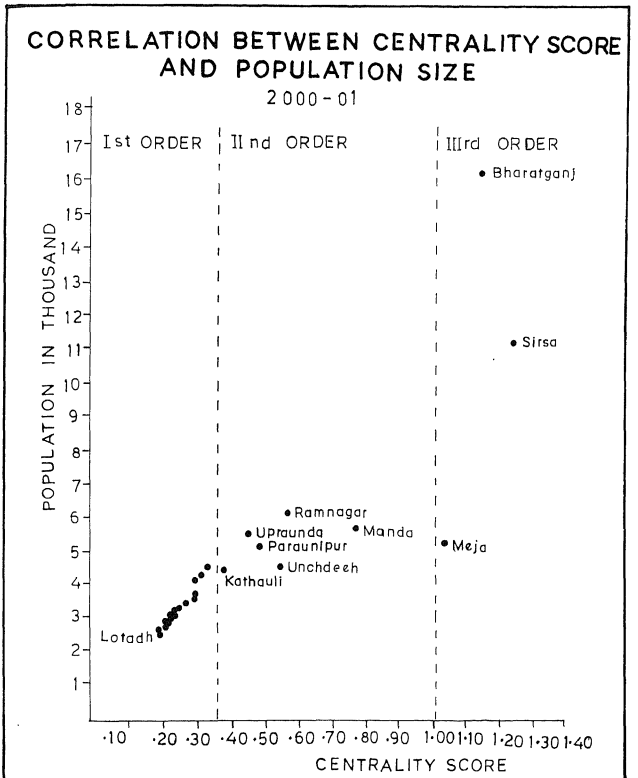

CORRELATION BETWEEN CENTRALITY SCORE AND POPULATION SIZE
2000-01
POPULATION IN THOUSAND
1st ORDER
IInd ORDER
IIIrd ORDER
Bharatganj
Sirsa
Ramnagar
Upraunda
Manda
Paraunipur
Meja
Unchdeeh
Kathauli
Lotadh
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
·10 ·20 ·30 ·40 ·50 ·60 ·70 ·80 ·90 1·00 1·10 1·20 1·30 1·40
CENTRALITY SCORE

Fig. 3·4

TABLE 3.3
COMPOSITE INDICES OF CENTRAL PLACES IN MEJA TAHSIL

S.No.	Name of Centre	Population	CCI
1.	Sirsa	11,161	1.25
2.	Bharatganj	16,204	1.14
3.	Meja	5,307	1.04
4.	Manda	5,532	0.76
5.	Ram Nagar	6,129	0.56
6.	Upraunda Uparhar	5,514	0.43
7.	Unchdeeh	4,676	0.52
8.	Paraunipur Uparhar	5,106	0.46
9.	Kathauli	4,415	0.36
10.	Ugandha	4,627	0.32
11.	Doharia	4,268	0.28
12.	Aunta	4,412	0.30
13.	Amilia Kalan	3,725	0.28
14.	Samhan	3,665	0.28
15.	Chhatwa Uparhar	3,476	0.26
16.	Newadhiya	3,365	0.24
17.	Dighia	3,210	0.23
18.	Barha Kalan	3,178	0.23
19.	Santao Patti	3,036	0.22
20.	Kohdar	3,014	0.22
21.	Rajapur	2,864	0.20
22.	Madra Mukundpur Uparhar	2,812	0.20
23.	Kosra Kalan	2,906	0.20
24.	Bhatauni	2,617	0.18
25.	Lotarh	2,548	0.18

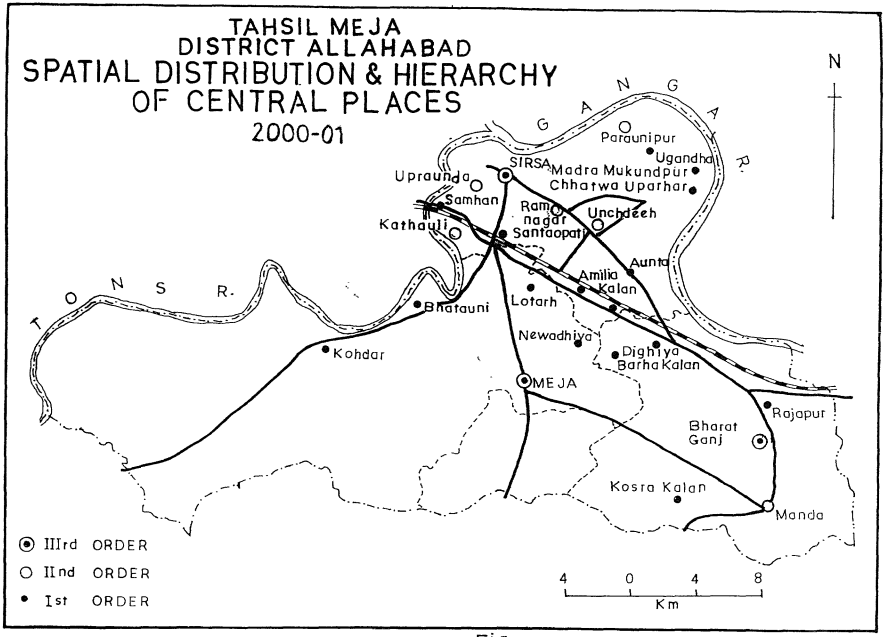

TAHSIL MEJA
DISTRICT ALLAHABAD
SPATIAL DISTRIBUTION & HIERARCHY
OF CENTRAL PLACES
2000-01
N
G A N G A R.
T O N S R.
Paraunipur
Ugandhal
SIRSA
Madra Mukundpur
Chhatwa Uparhar
Upraunda
Samhan
Ram nagar
Unchdeeh
Kathauli
Santaopati
Aunta
Amilia Kalan
Lotarh
Bhatauni
Kohdar
Newadhiya
Dighiya Barha Kalan
MEJA
Rajapur
Bharat Ganj
Kosra Kalan
Manda
IIIrd ORDER
IInd ORDER
Ist ORDER
4 0 4 8
Km

Fig.3.5

As the region has inadequate infrastructural facilities, the functional status and inter-linkages between second order and first order centres and dependent villages are very poor. There are only three growth points (Sirsa, Bharatganj and Meja), one each in Block Uruwa, Block Manda and Block Meja which play a significant role in regional development. The maximum concentration of these central places is in Uruwa Block, which has highest density of population, agricultural productivity and transport and communication facilities. There appears to be positive co-relation between the density of population, density of villages and the density of service centres. On the other hand, spacing of villages and service centres are negatively correlated. Whereas the northern part of the region characterized by low spacing between settlements has higher concentration of service centres/central villages, the southern part has lower concentration of service centres/central villages with high inter-settlement spacing.

3.7 Identification of Planning Units

The level of functional interaction between the central places (growth points, service centres and central village) and their complementary/service areas determine the patterns of spatial organisation of human activities over the space. The more uniform is the distribution of the service centers, the greater will be the spatio-functional interaction between them and their service areas[29]. An efficient spatial organisation of human activities plays a significant role in the balanced socio-economic development of the region. Naturally the identification of the spatial planning units rests on the delineation of the service/complementary areas of the service centres which can accelerate their development as they enjoy comparative advantage in spatio-functional organisation.

The interrelationship between the service centres and their service areas is, in fact, a spatial reality and provides logical basis for the identification of spatial planning units. The various terms, viz. umland, hinterland, sphere of influence,

tributary area, complementary area, trade area and the like have been used for the service area of a central place. But none of these terms connotes fixed territory surrounding a central place, which varies with the socio-economic characteristics as well as the functional status of the central places[30].

As the central functions not only serve the central places/service centres to which they are related, but they also serve their complementary areas/service areas which are determined in each case by the range of each central function. The Central Place Theory[31] of Christaller seeks to determine the order in the spacing of population clusters and settlements in the landscape. He proposed that settlements with the lowest order of specialization would be equally spaced and surrounded by hexagonal shaped service areas. For every six of these lowest order settlements there would be a larger and more specialized settlement, which in turn would be situated at an equal distance from other settlements of the same order and also surrounded by a hexagonal service area. Progressively more specialized towns with even larger hexagonal shaped service areas would be similarly located at an equal distance from each. "Christaller demonstrated that the final solution for a group of central places of similar order is a set of hexagonal complementary areas where the central places are arranged in a regular lattice."[32]

But his deductive model presupposes an isomorphic plane with uniform socio-economic conditions and physical framework. The ground realities are often quite different. Hence the demarcation of sevice areas/complementary areas has been attempted by the breaking point formula[33]. It is a modified version of Reilly's formula[34] as given below:

$$Lt = D / 1 + ACCI/BCCI$$

Where Lt = Limit of the complementary area of A from its centre towards B

ACCI – Composite centrality Index of centre A

BCCI – Composite centrality index of centre B

It may be worth mention that Reilly's model was first modified by P.D. Converse as follows:

$$Db = \frac{Dab}{1 + \sqrt{\frac{Pa}{Pb}}}$$

Where Db = the breaking point between City A and City B from City B

Dab = the distance separating City A from City B

Pa = the population of City A

Pb = the population of City B.

However, the author has used the aforesaid formula because the composite centrality indices of the central places have been already worked out (vide Table 3.3). Table 3.4 gives the spatial characters of the service centres and their service areas.

TABLE 3.4

Spatial Characteristics of Central Places and their Service Areas in Meja Tahsil

Central Places (Order)	CCI	No. of Central Places	Hypothetical No. of Central Places	Total Area served (Km^2) (Average)	Total population served (Aggregate)
III-Growth Points	1.14	3	3	288	1,44,791
II-Service Centres	0.52	6	12	144	72,395
I-Central Villages	0.24	16	36	54	21,523

The analysis of the data is based on socio-economic central functions and their composite centrality indices. The Study Area reveals that the spatial attributes should also be considered in delimiting service areas/complementary areas. Sirsa,

which is situated on the Tons above its confluence with the Ganga suffers from its locational limitations on the northern periphery of Uruwa Block and cannot claim of circular/hexagonal service area, which is rather attenuated and is limited to the Uruwa Block boundaries extending in eastern and southern directions, but for the Degree College whose complementary area is virtually co-terminus with the whole of Meja Tahsil. Similarly Bharatganj also shares a peripheral location in the contact zone of the Ganga Plain and the Vindhyan Upland and its service area extends over Manda Block and Koraon Block. Meja which has the tahsil headquarters as well as the block headquarters and the Telephone Exchange enjoys a more favourable location vis-a-vis its service area (PLATE 7 A). In fact the first order and second order central places also manifest these locational limitations.

The mapping of service centres and their service areas complementary areas did not yield the hexagonal patterns as visualised by Christaller. However, the hierarchical order of central places sustains the generic base of Christaller's theory of central places and provides a useful framework for spatial planning. It upholds the hypothesis pertaining to the Growth Centre Theory.

3.8 Service Areas As Planning Regions

With these ideas in view an attempt has been made here to offer an integrated regional base for spatio-functional organisation of economy and society. The identified central places and their service areas provide an intermeshed networking of micro spatial units. The existing centres are not adequate for the balanced regional development. That is why there is need for additional service centres for filling up spatial gaps and strengthening institutional and infrastructural facilities. These attempts will surely result in social, economic and cultural change and modernization in the region.

The rationale of spatial planning envisages spatial reorganization, redistribution and utilization and conservation of regional natural and socio-economic and institutional resources. It creates desirable conditions and opportunities for harmonizing man-environment relationship and securing maximum

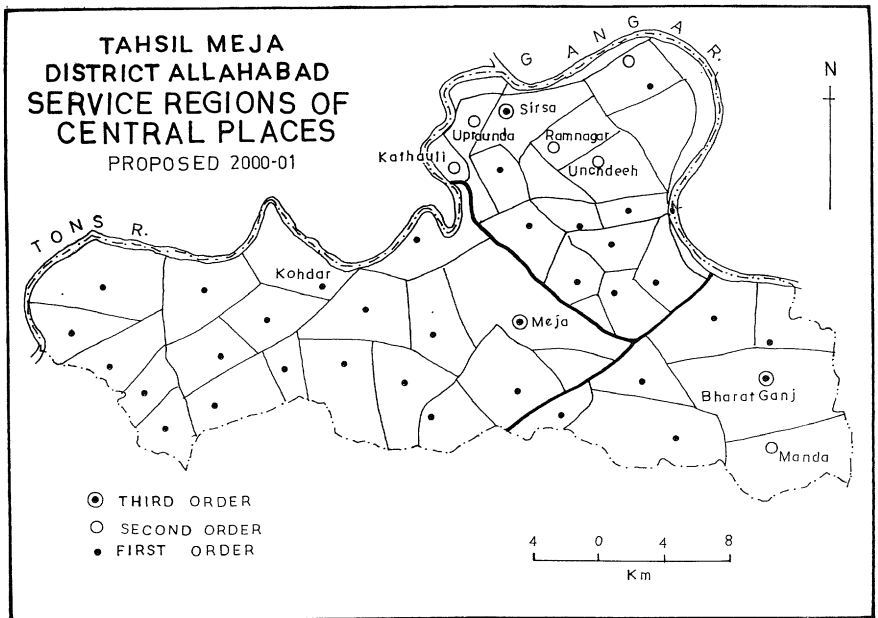

TAHSIL MEJA
DISTRICT ALLAHABAD
SERVICE REGIONS OF
CENTRAL PLACES
PROPOSED 2000-01
GANGA R.
TONS R.
N
Sirsa
Uptaunda
Ramnagar
Kathauli
Unchdeeh
Kohdar
Meja
Bharat Ganj
Manda
THIRD ORDER
SECOND ORDER
FIRST ORDER
4 0 4 8
Km

Fig. 3.6

welfare of the society. The service area is a spatial reality and offers a sound framework of spatial organisation and unity of socio-economic elements. It is a nodal/functional region. The socio-economic unification imports it a unique spatial character. It certainly provides a rationale for adopting such functional areas as spatial planning units, because they provide an integrated framework for forward and backward spatial linkages for strengthening and regulating the sectoral and spatial interconnections and transformation of the human habitat. The spatio-functional linkages in the hierarchal system of central places and their service areas make it a real two-way traffic rather than a just suction channel, by concerted coordinated measures.

The location and development theories and their applications in the Study Area have provided a nested hierarchy of service areas at three levels, which cover the entire region. In such a spatial network, the transmission of development strategies and the allocation of investments may be fairly regulated and the required institutions may be established accordingly at these centres, so that the benefits of development are equitably shared by all the sections of the society. The inter-networking of service areas provides a continuous spatio-functional hierarchical channel in which the planning for development starts from the grass root level (village) and rises to the service centres and growth points. In such a spatial system there is a complete decentralization of socio-economic activities, efficient movement of people, commodities and information (diffusion of innovation), because each service centre is functionally linked with its service area.

Moreover, the adoption of service areas as spatial units of planning helps in mitigating disparities and discrepancies between the administrative boundaries and the local communities.

3.9 Planning Implications

The service areas identified and delineated on the basis of spatial interaction and functional inter-dependence provide the viable spatial units for planning as they facilitate development process and diffusion of innovations. Planning for socio-

economic development for a region involves the decision of appropriate location for infrastructural and developmental activities[35]. When the developmental activities are located at the service centres they will positively stimulate favourable responses in their service areas and the benefits of developmental activities will transcend to the remotest locations in the countryside. The selection of appropriate development activities and their locations is a problem of development planning, which can be handled by the growth centre strategy very effectively.

It transpires from the above discussion that the three orders of central places and their service areas identified for the Study Area provide viable spatial units for developmental planning as they may be conveniently used for locating and integrating four categories of functions and services, viz. economic, social, infrastructural and institutional. There is certainly a need for small territorial units because people prefer to avail of these services at shorter distances and appropriate locations at minimum costs and efforts. Moreover, the choice of existing central places also decides the location of new functions because it makes wise use of the existing spatial patterns of people, economy and institutions and influences "the contours of the regions development programmes"[36].

Developmental measures can be effective only when the spatio-functional sub-systems of the region are well integrated. The service areas as spatial planning units meet this requirement adequately. R.L.P. Sinha has rightly observed: " to make the rural area livable and productive, a comprehensive spatial development plan at micro-level is needed, the outstanding feature of which is coordination of various economic and social activities in space, simultaneously taking note of all inter-dependant aspects of development and systematic and conscious location of the services in relation to human settlements for maximum advantages"[37].

"Spatial deveopment is a dynamic process" [38]. In a transitional economy like that of Meja Tahsil, the functional character and spacing of service centers is changing and may alter their relative importance vis-à-vis their service areas. In a

spatial planning exercise there is need for striking a balance between stability and change and building a dynamic spatial system. The developmental activities and institutions can serve a population most effectively and efficiently when their present and future needs are taken care of and the network of central places provides viable locations for service areas of different orders.

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CHAPTER- 4

Spatial Planning for Agricultural Development

4.1. Introduction

Agriculture constitutes the backbone of the Indian economy as it is the source of livelihood of 70 percent of the country's population [1]. "Agriculture is not merely an occupation, it is a way of life which for centuries has shaped the thoughts and outlooks of many millions of people"[2]. Yet the Indian Agriculture is characterized by low level of productivity, low level of farm technology and wide fluctuations in agricultural output due to vagaries of monsoon and inadequate irrigation facilities. The real problem of the Indian agriculture is that there are too many people who depend on agriculture and the demographic pressure is continuously increasing due to phenomenal rise in rural population and lack of diversification in rural economy. Another matter of concern is the declining share of agriculture in the national income. In 1950-51, agriculture contributed 57 percent of the national income, but now its share has declined to 32 percent.[3]

There is no gainsaying the fact that agricultural development is "an essential condition for the development of the national economy "[4]. According to V.K.R.V. Rao "India requires a minimum growth rate of 4 percent in food grains and non-food crops during the rest of the century to meet the basic requirement of the economy for food and agricultural raw materials ".[5] But during the last 50 years the compound growth rate of agriculture has been around 2.2 percent.

No doubt various programmes for agricultural development under the successive Five year plans have eased the situation and the green revolution, in particular, has raised food production substantially but it is feared that "Green revolution is turning into brown revolution" and has sent alarm signals. The new strategy is for eco-friendly agriculture, which can ensure sustainable development

for meeting the requirements of food, feed and industrial requirements for agro-based industries. New strategies of irrigation and water management as well as the use of bio-fertilizers have to be expanded.

4.2 Regional Overview

The agricultural situation in Meja Tahsil is far from satisfactory. It is certainly the main basis of the regional economy as 78.2 percent of the total main workers are engaged in agriculture, which also meets the local requirements for food, feed and raw materials for agro-based industries and marketable surplus for trade and commerce. But it is in a depressed state characterized by low productivity, low level of farm technology and inadequate irrigation facilities. It is essentially subsistence cultivation, which is under increasing pressure due to phenomenal rise in rural population and lack of diversification in rural economy. New technology has not made any significant impact on the growth of agricultural production. An important indicator of slow growth in food production is the marginal improvement in per capita availability. Besides, insufficient development of animal husbandry has led to decline in per capita availability of animal products. Even in forestry, the current level of supply is unable to meet the increasing demand for timber and fuel wood.

The rapid increase in rural population and fragmentation of family system [6] in the region has adversely affected the structure of agricultural holdings. The traditional agricultural practices are not eco-friendly as continued cultivation has accentuated the problems of soil erosion and soil exhaustion and the conservation and management of land and water resources have been ignored. In fact, they are not conducive to sustainable agricultural development.

The inputs of new farm technology have not received adequate acceptance due to poor economic conditions of the farmers, who have relied on their traditional agricultural practices and implements.

The lack of skill, capital and enterprise have been the major constraints in agricultural development of the region. Agriculture and animal husbandry are the inseparable elements of an agricultural system. But animal husbandry has not been adequately developed. Similar is the situation of agro-forestry and social forestry. Irrigation plays a very significant role in the agricultural development of a region. [7] There is enough potential and need for micro irrigation projects in the watershed based management in the region [8].

4.3 Land-use Pattern :

Land is the physical basis of agricultural development of a region. The existing land-use pattern has evolved as a result of interaction of various factors such as the physical characteristics of the land, socio-economic conditions and institutional framework [9] in the spatio-temporal matrix. Hence, it is a necessary pre-requisite to know the present land use pattern in order to plan for its optimum use [10]

Meja Tahsil presents a complex pattern of physico-cultural elements, which have largely contributed to the evolution of the existing land use pattern. The physical landscape of the Study Area has been greatly transformed during the last two centuries due to colonization processes. As the population increased, the demand for land for agriculture and non-agricultural uses increased, the forest area was cleared *pari passu*, resulting in ecological imbalance.

Table 4.1 depicts the land-use pattern for 1990-1991 and 2000-01 for Meja Tahsil (vide fig 4.1). During the last decade, the total reporting area increased from 81,952 ha to 82,360 ha. The net sown area also recorded an increase from 60.41 percent (1990-91) to 61.56 percent (2000-2001). The forest area increased its share from 7.90 percent to 8.10 percent due to afforestation programmes. Similarly non-agricultural uses as well as fallow land (including both current fallow and other fallow) registered slight increases. But there was a decline in culturable waste land

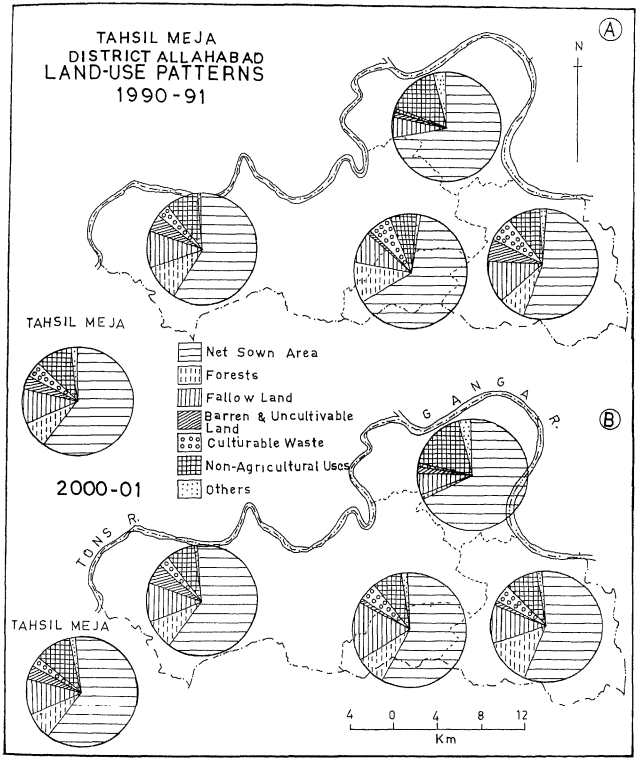

TAHSIL MEJA
DISTRICT ALLAHABAD
LAND-USE PATTERNS
1990-91
A
N
TAHSIL MEJA
Net Sown Area
Forests
Fallow Land
Barren & Uncultivable Land
Culturable Waste
Non-Agricultural Uses
Others
2000-01
GANGA R.
B
TONS R.
TAHSIL MEJA
4 0 4 8 12
Km

Fig. 4.1

from 4.39 percent to 3.15 percent (Fig. 4.3 A), barren and un-cultivable areas as well as pastures and grazing land. In fact, culturable waste land has declined due to reclamation for cultivation.

Table 4.1
Landuse pattern in Meja Tahsil

S No		1990-1991		2000-2001	
		Area (Hectares)	Percentage	Area (Hectares)	Percentage
1.	Total Reporting Area	81952	-	82360	-
2.	Forest	6468	7.90	6672	8.10
3.	Culturable Waste	3596	4.39	2599	3.15
4.	Current Fallow	4287	5.23	4591	5.58
5.	Others fallow	4161	5.07	4368	5.30
6.	Barren and Uncultivable land	3681	4.49	3122	3.80
7.	Non-Agricultural Uses	8821	10.77	9179	11.14
8.	Pastures and Grazing	94	0.11	72	0.08
9.	Misc. Tree Crops and groves	1329	1.63	1057	1.29
10.	Net Sown Area	49515	60.41	50700	61.56
11.	Double Cropped area	13482	-	17119	-
12.	Gross Sown Area	66000	-	67827	-

Source : Statistical Bulletins 1990 & 2000

The net sown area occupies 61.5 percent (2000-01) of the reporting area i.e. Meja Tahsil, but these are significant variations in the net sown area. Uruwa Block occupies the first rank (71.60) percent), followed by Meja (58.48 percent), Koraon (63.75 percent) and Manda (54.28 percent). A comparison of data for 1990-91 and 2000-01 reveals that the net sown area in Meja Tahsil has increased from 60.41 to 61.56 percent, but it has declined in Uruwa Block (68.06 percent) and Koraon Block (58.97 percent) and increased in Meja Block (61.46 percent) and Manda Block

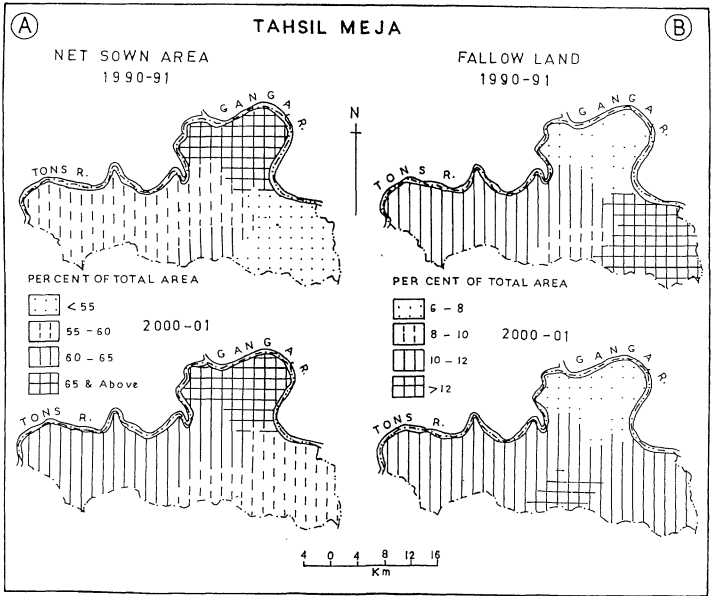

A
TAHSIL MEJA
B
NET SOWN AREA
1990-91
FALLOW LAND
1990-91
GANGA R.
TONS R.
N
PER CENT OF TOTAL AREA
< 55
55 - 60
60 - 65
65 & Above
2000-01
6 - 8
8 - 10
10 - 12
>12
4 0 4 8 12 16
Km

Fig.4.2

(57.03 percent). The increase in net sown area (Vide Fig 4.2 A) is indicative of efforts for raising agricultural production through extension of the NAS.

The current fallow and other fallow show variations in both 1990-91 and 2000-01. In 1990-91 both Meja and Manda (5.78 percent) accounted for the highest percentage of current fallow, followed by Uruwa (3.89 percent) and Koraon (3.06 percent), while in 2000-01 Koraon (7.71%) led and was followed by Meja (5.92 percent), Manda (5.82 percent) and Uruwa (3.85 percent) (vide Fig. 4.2 B). The reason for the current fallow is generally to provide land a year for recuperation, but other fallow land may be due to inadequate irrigation facilities, silting, un-remunerative nature of farming.

In 1990-91, the barren and uncultivable land has the highest concentration in Manda Block (6.27 percent), followed by Meja (5.20 percent), Uruwa (1.63 percent) and Koraon (0.91 percent). But in 2000-01 Meja Block accounted for the highest (6.29 percent) percentage of the barren and uncultivable wasteland, followed by Uruwa (1.8%), Manda (1.4%) and Koraon (1.02 percent) (vide Fig. 4.3 B). In 1990-91 the land put to non-agricultural uses was the highest in Uruwa Block (15.78 percent), followed by Manda (9.72 percent), Meja (9.56 percent) and Koraon (7.48 percent). In 2000-01, the land put to non-agricultural uses increased to 18.18 percent in Uruwa Block, 9.95 percent in Manda Bock, 9.07 percent in Meja Block and 8.86 percent in Koraon Block (vide Fig. 4.4 B). The increase in the area put to non-agricultural uses indicates increase in the developmental activities[11].

Pasture and grazing land has registered a decrease from 0.11 percent in 1990-91 to 0.08 percent in 2000-01. It is also well reflected at the Block level also.

The slight increase in forest area in Tahsil Meja, during the decade has varied patterns. It has made significant increase in Manda Block (1990-91 : 7.38 percent and 2000-01 : 13.76 percent) but, it has declined in Meja and Koraon Blocks. Of course, Uruwa Block has virtually no forest area.

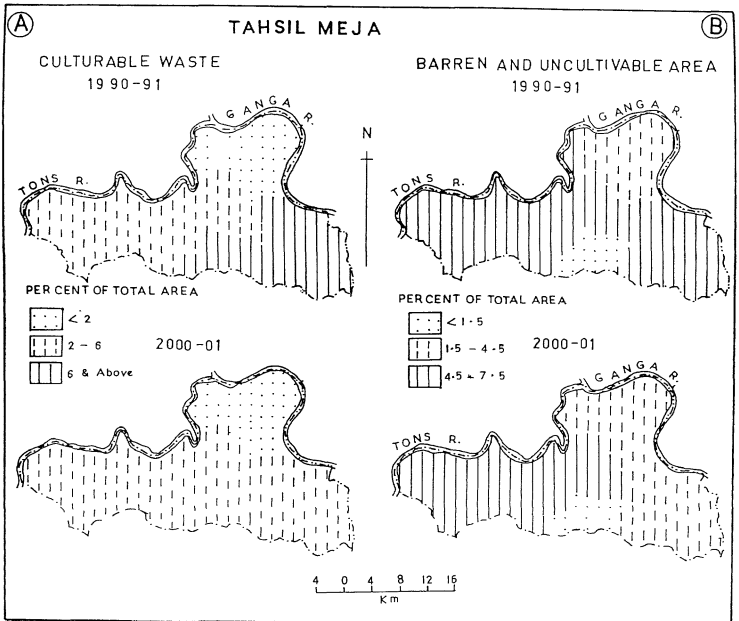

A
TAHSIL MEJA
B
CULTURABLE WASTE
1990-91
BARREN AND UNCULTIVABLE AREA
1990-91
GANGA R.
TONS R.
N
PER CENT OF TOTAL AREA
< 2
2 - 6
6 & Above
2000-01
PERCENT OF TOTAL AREA
< 1·5
1·5 - 4·5
4·5 - 7·5
2000-01
4 0 4 8 12 16
Km

Fig. 4·3

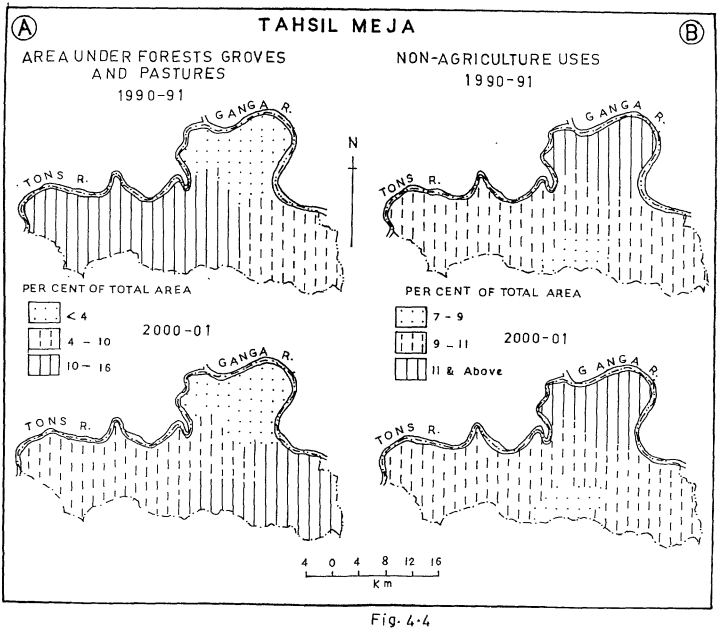

TAHSIL MEJA
A
B
AREA UNDER FORESTS GROVES AND PASTURES
1990-91
NON-AGRICULTURE USES
1990-91
GANGA R.
TONS R.
N
PER CENT OF TOTAL AREA
< 4
4 - 10
10 - 16
2000-01
7 - 9
9 - 11
11 & Above
4 0 4 8 12 16
km

Fig. 4.4

The land under miscellaneous tree crops and groves has decreased from 1.63 percent (1990-91) to 1.29 percent (2000-01)[9]. Incidentally Uruwa Block carries the highest percentage of land put to miscellaneous tree crops and groves (3.60 percent) followed by Manda (1.98 percent), Meja (1.72 percent) and Koraon (0.53 percent) (vide Fig. 4.4 A).

4.4 Cropping Intensity

Cropping intensity computed as percentage of total cropped area to the net sown area[12] reveals the degree of multi-cropping in a region. It signifies the cultivation of more than one crop in the same field during one agricultural calendar year. It is made possible by requisite infrastructural facilities, agricultural inputs and judicious land management. The greater the area is under multi-cropping, the higher is the cropping intensity as well as crop productivity and agricultural income.

The cropping intensity has been calculated on the basis of the following formula.

$$\text{C.I.} = \left(\frac{GCA}{NCA} \times 100\right)$$

were C. I. Stands for the cropping intensity

G.C.A. = Gross Cropped Area

N.C.A. = Net Cropped/Sown area.

The Block wise variations in the cropping intensity are given in Table-4.2.

TABLE 4.2
Patterns of Cropping Intensity in Meja Tahsil

Block	1990-01	2000-01
Uruwa	143.80	144.20
Meja	121.45	129.27
Koraon	137.45	143.05
Manda	125.37	128.20
Tahsil Meja	**132.29**	**133.77**

Source : Statistical Bulletins, Allahabad District 1990 and 2000

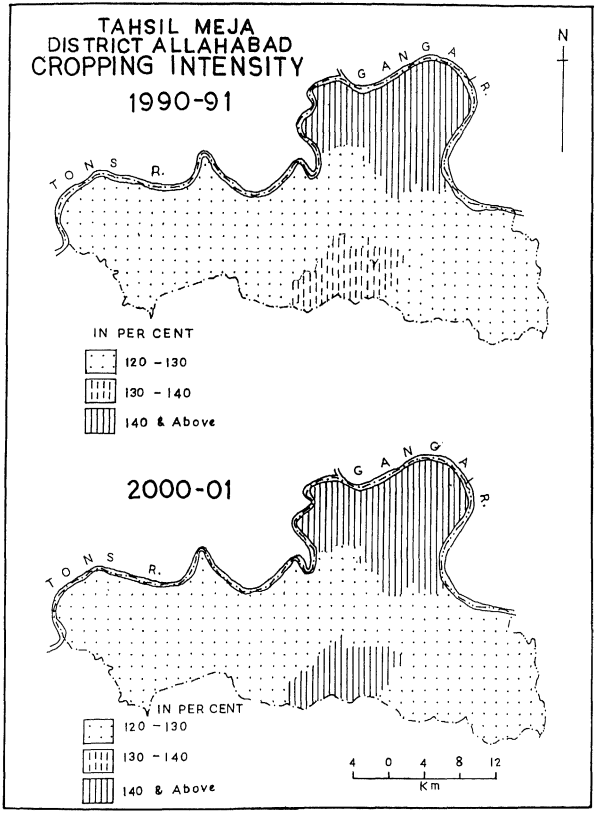

TAHSIL MEJA
DISTRICT ALLAHABAD
CROPPING INTENSITY
1990-91
GANGA R.
TONS R.
N
IN PER CENT
120 - 130
130 - 140
140 & Above
2000-01
GANGA R.
TONS R.
IN PER CENT
120 - 130
130 - 140
140 & Above
4 0 4 8 12
Km

Fig. 4·5

It is clear from table 4.2 that Uruwa block carries the highest cropping intensity in both 1990-91 and 2000-01 and is followed by Koraon, Meja and Manda Blocks. But the overall decadal change in the cropping intensity of Meja Tahsil as well as Uruwa Block is not very significant as compared to Meja, Koraon and Manda Blocks (Vide Fig. 4.5). It indicates that multiple cropping has not attracted much attention by the farmers, who are not quite innovative and enterprising and have no adequate irrigation facilities for intensifying their harvesting practices. There is a positive correlation between cropping intensity, irrigation intensity and soil fertility.

As there is not much scope for extension of cultivated area, the greater intensity of cropping is the alternative strategy for increasing agricultural production and productivity and landuse efficiency for tapping irrigation potential and scientific land management practices in different blocks of Meja Tahsil.

4.5 Cropping Patterns

Cropping pattern has been defined as the proportion of area under different crops in an agricultural calendar year, in a region. The existing cropping pattern is the cumulative result of the past and present agricultural practices influenced by economic, social and ecological factors. The National Commission on Agriculture has rightly observed "The cropping pattern depends primarily on soils and climatic factors, but as they evolve, also represent the integrated effect of the requirements, local habits and economic factors through time "[13]

The cropping pattern of the study area is more or less traditional in which most of the cropped land is put under food crops, whereas the cash crops occupy a small percent of the total cropped area. Its important crops are rice, wheat, millets, maize, potato, sugarcane, pulses and oil seeds. The share of different crops in total cropped area varies widely (Table 4.3) (Fig. 4.6). The existing cropping pattern reflects the subsistence character of the regional agriculture, which is essential for a

TABLE 4.3 : *Cropping Pattern* :- 1990-91 & 2000-01

BLOCK	YEAR	RICE	WHEAT	BARLEY	MAIZE	MILLETS	PULSES	OILSEEDS	SUGARCANE	POTATO	Others
MEJA	1990-91	22.72	36.60	3.14	0.03	9.36	17.94	7.5	0.12	O.54	2.05
	2000-01	26.54	35.45	1.67	0.00	8.43	18.14	6.62	0.05	0.54	1.56
KORAON	1990-91	33.11	36.76	2.30	0.04	8.33	14.57	2.83	0.19	0.19	1.68
	2000-01	34.09	38.71	1.47	0.06	6.4	14.91	3.07	0.08	0.22	0.99
MANDA	1990-91	30.86	34.08	1.78	0.04	10.36	13.22	4.47	0.19	0.72	4.28
	2000-01	22.21	36.13	1.19	0.02	10.52	18.16	7.67	0.18	0.98	2.94
URUWA	1990-91	21.87	34.97	2.33	-	27.41	13.04	0.27	0.30	2.13	2.63
	2000-01	19.08	36.12	1.74	-	23.88	13.00	0.77	0.22	2.50	2.69
TOTAL of TAHSIL	1990-91	25.15	35.55	3.82	0.03	12.99	15.28	4.57	0.19	0.98	1.44
	2000-01	24.26	36.45	1.57	0.01	12.54	16.65	5.2	0.13	1.10	2.09

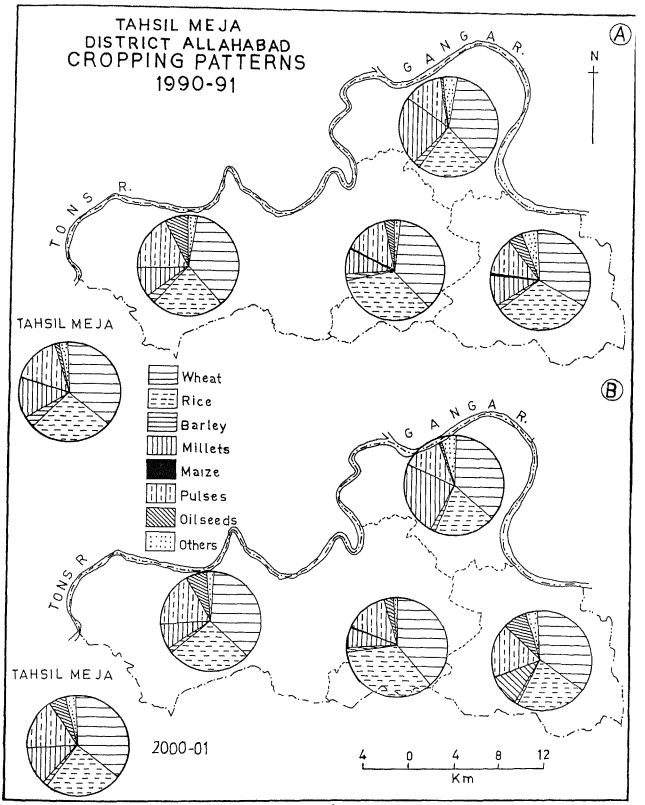

TAHSIL MEJA
DISTRICT ALLAHABAD
CROPPING PATTERNS
1990-91
A
N
G A N G A R.
T O N S R.
TAHSIL MEJA
Wheat
Rice
Barley
Millets
Maize
Pulses
Oilseeds
Others
B
G A N G A R.
T O N S R.
TAHSIL MEJA
2000-01
4 0 4 8 12
Km

Fig.4.6

densely populated area as its soil moisture demands are limited and is well suited for crop rotation.

There are three main cropping seasons: Kharif Season, Rabi Season and Zaid season, which have distinctive cropping patterns. In the study area, the Rabi Crops are more important than the Kharif crops in terms of both production and area (Vide table 4.4). But in Uruwa block, the Kharif crops out excel the Rabi crops (2000-01 : Rabi Crops – 46.68 percent and Kharif crops - 50.82 percent) whereas other blocks adhere to the regional pattern : The percentage share of the Rabi crops is the highest in the Meja block (60.78 percent), followed by Manda (60.30 percent), Koraon (55.78 percent) and Uruwa (46.68 percent). The Zaid crops cover barely 164 ha, of which Ururwa block carries 81 ha i.e 0.48 percent of the total cropped area of Meja Tahsil (Fig. 4.7).

Kharif Season

The Kharif Cropping season in the study region spreads over four and a half months starting from July and ending up in mid-November. The Principal Kharif crops grown in the area are Paddy, Millets, maize, urad, Moong, Arhar etc (vide table 4.5). The cultivation and preparation of fields for sowing starts in the last week of June after the first downpour of south-west monsoon. If the monsoon rains are on time, the sowing of Kharif crops starts in the first week of July, but if monsoons are delayed, the sowing starts in the third week of July. The Production Cost of Kharif crop is fairly low as compared to Rabi crops, as they require small quantities of seeds, fertilizers and other inputs and almost no irrigation if the monsoon rains are timely.

The kharif crops accounted for about 43.9 percent of the total cropped area in the region in 1990-91 which decreased to 42.38 percent in 2000-01 in the Tahsil.

Rice : Rice is the most important Kharif crop, accounting for 25.15 percent of the total cropped area of the tahsil in 1990-91, whereas it declined to 24.26

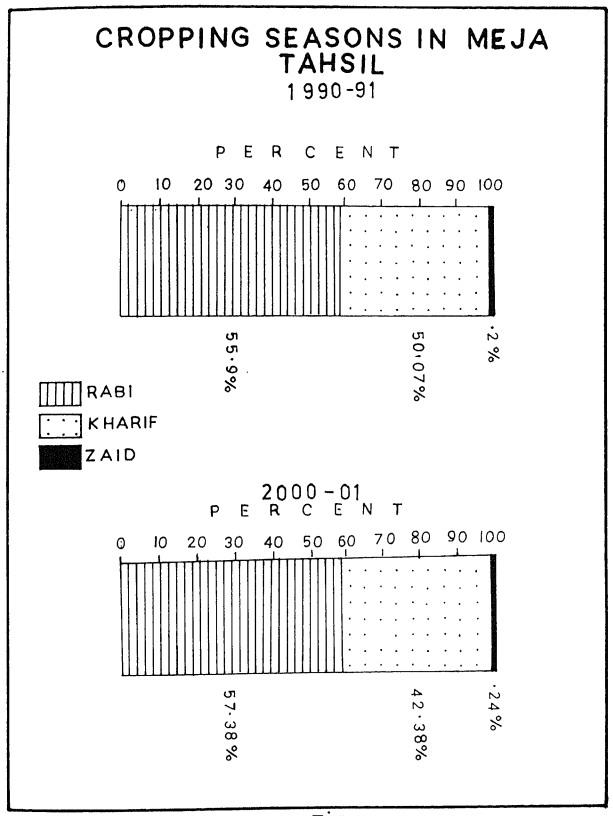

CROPPING SEASONS IN MEJA TAHSIL
1990-91
P E R C E N T
0 10 20 30 40 50 60 70 80 90 100
55·9%
50·07%
·2%
RABI
KHARIF
ZAID
2000-01
P E R C E N T
0 10 20 30 40 50 60 70 80 90 100
57·38%
42·38%
·24%

Fig. 4·7

Table - 4.4

(A) CROPPING PATTERN IN TAHSIL MEJA (1990-91)

S.No.	Blocks	Total Cropped Area (ha)	Rabi Crops	Kharif Crops	Zaid Crops
1.	MEJA	28217.1	17664.0 (62.60)	10539.6 (37.35)	13.5 (0.05)
2.	KORAON	4077.6	2303.9 (56.50)	1772.8 43.48)	0.9 (0.02)
3.	MANDA	16308	8315.4 (50.99)	7974 (48.90)	18.6 (0.11)
4.	URUWA	17398	8596 (49.41)	8711 (50.07)	91 (0.52%)
	TOTAL	66000	36879.3 (55.9%)	28997.4 (43.9%)	124 (0.2%)

Sources : Statistical Bulletin , Allahabad District - 1990

(B) CROPPING PATTERN IN TAHSIL MEJA (2000-01)

S.No.	Blocks	Total Cropped Area (ha)	Rabi Crops	Kharif Crops	Zaid Crops
1.	MEJA	31804.2	19330.4 (60.78)	12421.4 (39.05)	52.4 (0.16)
2.	KORAON	4479.1	2498.4 (55.78)	1979.4 (44.19)	1.3 (0.03)
3.	MANDA	14960.4	9020.4 (60.30)	5910.6 (39.50)	29.4 (0.20)
4.	URUWA	16579	8072 (46.68)	8426 (50.82)	81 (0.48)
	TOTAL	67822.7	38921.2 (57.38%)	28737.4 (42.38%)	164 (0.24%)

Sources : Statistical Bulletin , Allahabad District - 2000

NOTE : The figures given in brackets indicate percentage share

percent of the total cropped area in 2000-01. In the Study Area, rice is the second important staple crop for the majority of the people and it clearly dominates the economy of the area especially during Kharif season (PLATE 11 A). The area is well suited to rice cultivation owing to its suitable environmental conditions i.e. adequate rainfall, fertile soils, better irrigation facilities and availability of cheap labour for agricultural activities.

In the Study Area, the percentage share of rice cultivation in 1990-91 was its highest (more than 30%) in Koraon and Manda blocks with 33.11% & 30.86%, while in Meja block , 22.72 percentage was recorded and in Uruwa block 21.87%. Whereas in 2000-01 rice cultivation had its highest percentage (more than 30%) in Koraon block with 34.09 %, while Meja, Manda & Uruwa are sharing 26.54%, 22.21% and 19.08 % (Fig. 4.8 A).

Jowar : - Jowar shares 4.23% percent of the total cropped area of the tahsil in 1990-91, whereas it declined to 3.69% of the total cropped area in 2000-01. This is one of the important food crops in Kharif and forms one of the major elements in the diet of the poor village folk (Plate 11 B). It can be easily grown even in poor and sandy soil and where facilities for irrigation are limited or are not available. The highest percentage under Jowar in 1990 was above 6% in Koraon Block with 6.99 %, while more than 4% in Meja & Ururwa blocks (4.02% & 4.95%) and less than 4% in Manda block with 3.15% of the total cropped area of the tahsil . Whereas in 2000, highest percentage under Jowar is more than 4% in Koraon & Uruwa blocks (4.95% & 4.80%) and below 4% in Meja and Manda blocks (3.11% & 3.30%) (vide Fig. 4.9 A).

Bajra :- In the study area, Bajra shared 8.76% of the total cropped area of the Tahsil in 1990-91, whereas it rose to 8.85% of the total cropped area in 2000-01. This is also one of the main food crop of the Kharif season. In 1990, Bajra covered the highest percentage of cropped area (17.51%) in Uruwa , followed by Manda (7.21%) and Meja (5.34%). It is the least concentrated in Koraon (1.34%),

(A) PADDY FIELDS

(B) JOWAR CROP (MEJA BLOCK)

PLATE NO- 11

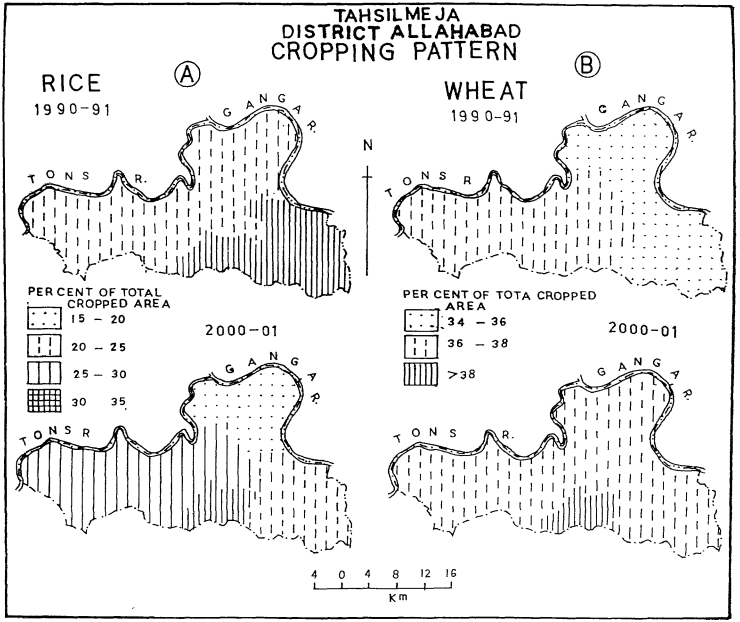

TAHSILMEJA
DISTRICT ALLAHABAD
CROPPING PATTERN
RICE
1990-91
A
WHEAT
1990-91
B
N
TONS R.
GANGA R.
PER CENT OF TOTAL CROPPED AREA
15 - 20
20 - 25
25 - 30
30 35
2000-01
PER CENT OF TOTA CROPPED AREA
34 - 36
36 - 38
>38
4 0 4 8 12 16
Km

Fig. 4.8

Table - 4.5

(CROPPING PATTERN OF KHARIF SEASON IN TAHSIL MEJA (1990-91)

(in Hectares)

S.No.	BLOCKS	RICE	JOWAR	BAJRA	MAIZE	ARHAR
1.	MEJA	6413	1137	1507	11	898.8
2.	KORAON	1350	285	55	2	16.3
3.	MANDA	5034	514	1176	7	502.2
4.	URUWA	3805	862	3047	-	628
5	**TOTAL OF TAHSIL**	**16602**	**2798**	**5785**	**20**	**2045.3**

(CROPPING PATTERN OF KHARIF SEASON IN TAHSIL MEJA (2000-01)

(in Hectares)

S.No.	BLOCKS	RICE	JOWAR	BAJRA	MAIZE	ARHAR
1.	MEJA	8442	992	1695	0.9	951.3
2.	KORAON	1527	222	65	3	117.7
3.	MANDA	3324	495	1081	4	531
4.	URUWA	3164	796	3164	1	909
5	**TOTAL OF TAHSIL**	**16457**	**2505**	**6005**	**8.9**	**2509**

Sources : The District Statistical Bulletins (Allahabad), Vikas Bhavan 1990-2001

while in 2000-01, Bajra covers the highest percentage of cropped area (19.08 %) in Uruwa block followed by Manda (7.22%) & Meja (5.32%) and it is least concentrated in Koraon (1.45%) (vide Fig. 4.9 A)

Maizes :- Maize shares 0.03% of the total cropped of Tahsil in 1990-91, whereas 0.01% is the total cropped area in 2000-01.

Arhar Dal:- While Arhar dal shared 3.09% of the total cropped area of tahsil in 1990-91, whereas 3.69% is the total cropped area in 2000-01(Plate 12 A). In 1990-91, Ururwa block had the credit of covering the highest percentage of cropped area under Arhar Dal (3.60%). It is least concentrated in (0.39%) Koraon block, while in 2000-01 Uruwa block has the credit of covering the highest percentage of cropped area under Arhar Dal (5.48%). It is the least concentrated (2.61%) in Koraon Block.

Rabi Season :

The Rabi cropping season formally begins around mid-November and lasts up to March-April. Unlike the Kharif crops they require good irrigation facilities. The principal crops of Rabi season are wheat, Barley, gram, peas, masoor, potato etc (vide table 4.6). These crops jointly accounted for about 55.9 percent of the total cropped area in the Study Region in 1990-91, which rose to 57.38 percent of the total cropped area in the Study Area in 2000-01. Tahsil total acreage under the Rabi crop was 36879.3 hectares in 1990-91, which rose to 38921.2 hectares in 2000-01.

Wheat : - Wheat is the most important staple crop of area covering 35.55 percent of the total cropped area of the tahsil in 1990-91, whereas it rose to 36.45 percent of the total cropped area in 2000-01 (Plate 12 B). The wheat production has registered a relatively higher growth rate in this area as compared to rice. In the Study Area, wheat cultivation in 1990-91 was showing its highest percentage (more than 35%) in Koraon and Meja blocks with 36.76% and 36.60 %, respectively. While Manda recorded 34.08% and Ururwa 34.97%.

(A) ARHAR PLANTS IN MEJA TAHSIL

(B) WHEAT HANTS IN MEJA TAHSIL

PLATE NO - 12

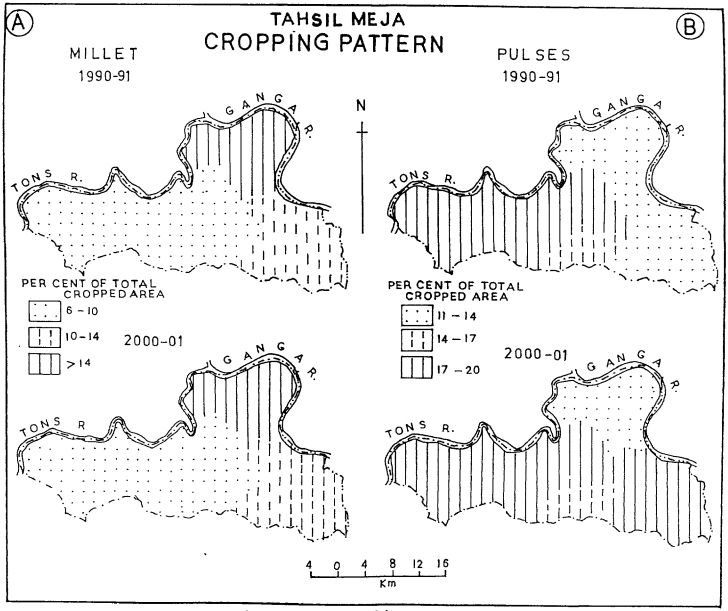

A
TAHSIL MEJA
CROPPING PATTERN
B
MILLET
1990-91
PULSES
1990-91
N
GANGA R.
TONS R.
PER CENT OF TOTAL CROPPED AREA
6 - 10
10 - 14
> 14
2000-01
PER CENT OF TOTAL CROPPED AREA
11 - 14
14 - 17
17 - 20
2000-01
4 0 4 8 12 16
Km

Fig. 4.9

Whereas in 2000-02 wheat showed its highest percentage (38.71%) in Koraon block, 36.45% in Meja block, 36.13 percent in Manda block and 36.12% in Uruwa block (Fig. 4.8 B).

Barley : - This is an important Rabi staple and is grown throughout the tahsil and does not require much labour, a very fertile soil or much irrigation. It is grown alone or in combination with wheat, gram and peas. Barley occupied 3.82% of the total cropped area of the tahsil in 1990-91, whereas it declined to 1.57 percent of the total cropped area in 2000-01. In Study Area, in 1990 Barley showed its highest percentage (3.14%) in Meja block, while Koraon (2.30%), Uruwa (2.33%) & Manda (1.78%) record lower percentages. Whereas in 2000-01, Barley is showing its highest percentage in Uruwa block (1.74%), followed by Meja block (1.67%), in Koraon block (1.47%) and Manda block (1.19 %) (Fig. 4.10 B)

Gram: - Gram also being an important crop, does not require very good soil or much manuring as it is leguminous and adds to the fertility of the soil. It is grown in the comparatively drier parts or is sown alone or mixed with wheat or barley. Gram covered 11.15% of the total cropped area of the tahsil in 1990-91, whereas in 2000-01 it has decreased to 10.5 % of the total cropped area. In 1990-91, the highest percentage of gram was shown in Meja block (13.48%) and lowest percentages (8.84%) in Uruwa block while in 2000-01 Gram shows highest percentage (12.78%) in Manda block and lowest percentage (6.64%) in Uruwa block.

Peas: - This cereal is generally sown mixed with barley and gram. In the tahsil, improved varieties are gradually replacing the older types. It is also used in the rotation of crops for increasing the fertility of the soil. Peas covered 0.61% of the total cropped area of the tahsil in 1990, whereas it rose to 1.33 percent in 2000.

Potato: - Potato covered 0.98% of the total cropped area of the tahsil in 1990-91 which rose to 1.10 % in 2000-01. The total acreage under Potato in 1990 was

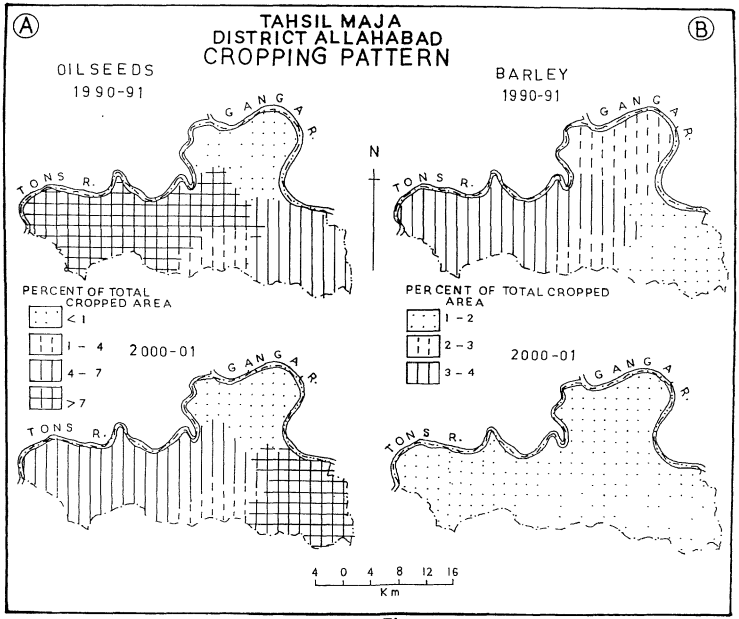

A
TAHSIL MAJA
DISTRICT ALLAHABAD
CROPPING PATTERN
B
OILSEEDS
1990-91
BARLEY
1990-91
GANGA R.
TONS R.
N
PERCENT OF TOTAL CROPPED AREA
< 1
1 - 4
4 - 7
> 7
1 - 2
2 - 3
3 - 4
2000-01
4 0 4 8 12 16
Km

Fig. 4.10

Table - 4.6

(CROPPING PATTERN OF RABI SEASON IN TAHSIL MEJA (1990-91)

(in Hectares)

S.No.	BLOCKS	WHEAT	BARLEY	GRAM	PEA	POTATO
1.	MEJA	10326	887	3803.4	182.8	153.8
2.	KORAON	1499	94	529.8	24.2	8.17
3.	MANDA	5559	291	1488.6	118.8	118.8
4.	URUWA	6085	406	1539	83	371
5	**TOTAL OF TAHSIL**	**23469**	**1678**	**7360.8**	**408.8**	**651.77**

(CROPPING PATTERN OF RABI SEASON IN TAHSIL MEJA (2000-01)

(in Hectares)

S.No.	BLOCKS	WHEAT	BARLEY	GRAM	PEA	POTATO
1.	MEJA	11593	534	3668.5	579.2	174.6
2.	KORAON	1734	66	447.6	26.1	10.43
3.	MANDA	5406	179	1912.2	172.2	147
4.	URUWA	5989	289	1102	127	415
5	**TOTAL OF TAHSIL**	**24722**	**1068**	**7130.3**	**904.5**	**747.03**

Sources : The District Statistical Bulletins (Allahabad), Vikas Bhavan 1990-2001

651.77 hectares while it rose to 747.03 hectares in 2001-02.

Zaid Season :

This cropping season spreads from April to June. The principal Zaid crops are maize, Moong, Urad and a variety of vegetables, which jointly account for about 0.24% (164 ha) of the total cropped area with a modest increase from 1990-91 (124 ha) The total acerage under these crops is irrigated by tubewells, pumpsets, and canals. The acreage under Zaid crops was almost negligible but during the last one decade due to the growing functional dimensions and population size in service centers, the acreage under these crops has considerably increased. However the greater percentage of acreage under Zaid crops is concentrated around the service centres, which testifies to the fact that the service centres can play a significant role in promoting the cultivation of Zaid crops in their vicinal areas.

Other Food Crops

Pulses : Pulses are produced in Meja Tahsil in both Kharif and Rabi. Pulses covered 15.28 % of the total cropped area in 1990-91, which rose to 16.65 percent in 2000-01. They are widely grown throughout the region. In 1990-91, the highest percentage of pulse was in Meja block (17.94%), while in 2000-01 it was in Manda (18.16%). The lowest percentage of pulses in 1990-91 was 13.04 % in Uruwa block and in 2000-01 (13.0%), again in Uruwa block (Fig 4.9 B)

Other Non-Food Crops

Oilseed:- Oilseeds are produced in Meja tahsil in both Kharif and Rabi season. They cover 4.57% of the total cropped area in 1990-91, which rose to 5.2 % in 2000-01. They are grown throughout the region. In 1990-91, the highest percentage of oilseeds was in Meja block (7.5%), while in 2000-01, in Manda block (7.67%). The lowest percentage of oilseeds in 1990-91 was in Uruwa block

(A) LINSEED PLANTS IN MEJA TAHSIL

(B) MUSTARD PLANTS IN MEJA TAHSIL

PLATE NO - 13

(0.27%) and in 2000-01, again in Ururwa block (0.77%) (Plate 13 A, B) (Fig. 4.10 A).

4.6 Crop Combination Regions :

Crop associations reflect the variable positions of the individual crops among themselves as well as their integral complex, and are useful for the analysis and synthesis of crop land use pattern and their crop planning. The crop combination is a useful technique for measuring the aerial dominance of various crops in a region as well as their ranking and intensity. The credit of introducing crop combination analysis in geographical research goes to J C Weaver, [14] who adopted both semi-statistical and statistical techniques to establish crop combination in a region. While in the former case, the crop combination is established arbitrarily, the latter utilizes the deviation from the theoretical distribution. After Weaver, Doi propounded one sheet table, which can be demonstrated by making use of actual percentage under different crops.

The practice of mono-culture, has hardly been seen on a significant scale in any part of India, if ever, it has been confined only to a few localities, where the physical conditions strictly favoured cultivation of a single crop. In contrast, the practice of raising multiple crops in a field in a single cropping season has a long tradition in India, because of the chequered pattern of physical, social and economic features prevailing across the length and breadth of the country. In modern times, the raising of several crops in combination at a time, has become more popular rather than a necessity for raising crops for food, raw materials and other requirements. The practice of crop associations has also promoted better utilization and management of land resources, efficient use of labour and judicious utilization of inputs like irrigation, seeds, fertilizers, pesticides, farm technology and capital etc. Moreover, it also provides better understanding of the cropping pattern and the perceptual behaviour of the farming community of the region.

The crop combination practiced in Meja Tahsil in addition to advantages enumerated above, provides security against the vagaries of rainfall, promoting full utilization of irrigation potential and higher yields, to meet the multiple requirements of the farming community.

In finalizing crop-combination, the method used is based on crop ranking by taking into consideration, crop respective percentage share of sown area, in 1990-91 and 2000-01 on the block basis, and thereupon grouping them into crop combination regions by technique used by J C Weaver. In the group formation, only those crops have been included, which carry 5% or more of the cultivated area in a block. In crop ranking, first one crop only, first two crops and first three crops were respectively mapped (vide table 4.7 A) (Fig. 4.11 A, B) & (Fig. 4.12 A) The first crop ranking mainly covers wheat followed by Rice, Gram, Bajra, Linseed and Jowar. The ranking based on first crop (wheat) is observed in all the blocks Meja, Manda, Uruwa, Koraon block of the tahsil. The ranking based on first two crops (Wheat – Rice) is also observed in all the blocks. The ranking of the first three crops is observed in blocks, where Wheat-Rice-Gram is in Meja, Koraon and Manda blocks, both in year 1990-91 and 2000-01. While Wheat-Rice-Bajra is observed in Uruwa block both in same years. The ranking of first four crops is observed in all the blocks, in both the years. Wheat-Rice-Gram-Linseed in Meja block, Wheat-Rice-Gram-Jowar in Koraon block, Wheat-Rice-Gram-Bajra in Manda block, and Wheat-Rice-Bajra-Gram in Uruwa block (vide table 4.7 B).

Thus the proposed crop-combination for Meja block is WRGL in 1990-91 and 2000-01, in Manda block WRGB, in Uruwa block WRGB, In Koraon block WRGJ (vide table 4.7 C) & (Fig. 4.12 B). These are the various crop combinations proposed for the tahsil.

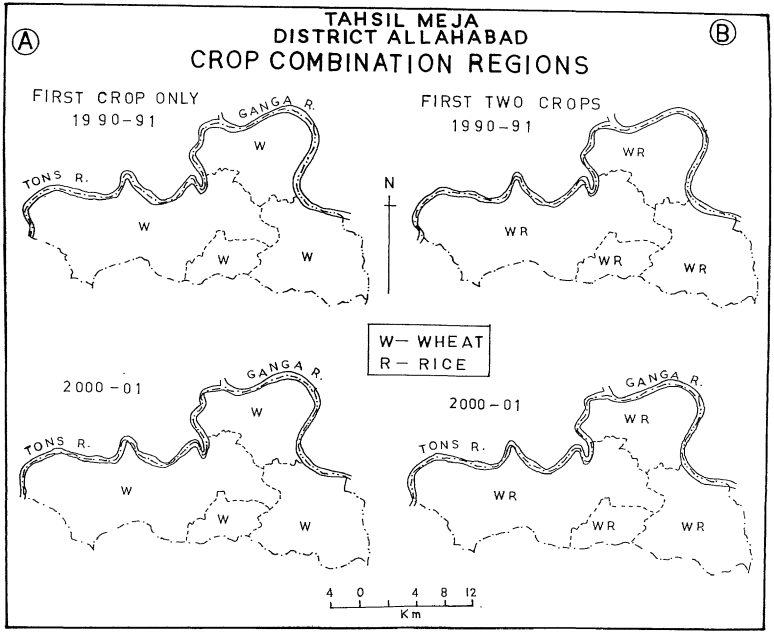

TAHSIL MEJA
DISTRICT ALLAHABAD
CROP COMBINATION REGIONS
A
B
FIRST CROP ONLY
1990-91
FIRST TWO CROPS
1990-91
GANGA R.
TONS R.
W
WR
N
W— WHEAT
R— RICE
2000-01
4 0 4 8 12
Km

Fig. 4.11

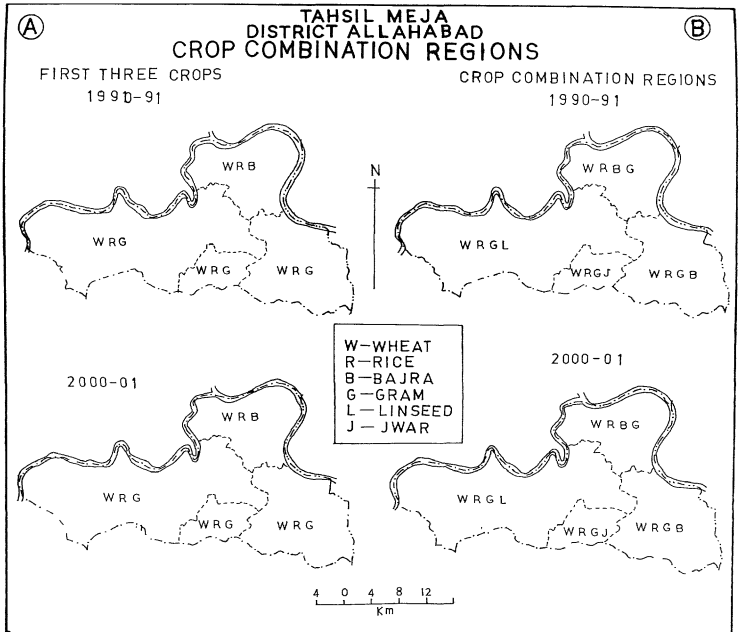

Ⓐ
TAHSIL MEJA
DISTRICT ALLAHABAD
CROP COMBINATION REGIONS
Ⓑ
FIRST THREE CROPS
1990-91
CROP COMBINATION REGIONS
1990-91
WRB
WRG
WRG
WRG
N
WRBG
WRGL
WRGJ
WRGB
W—WHEAT
R—RICE
B—BAJRA
G—GRAM
L—LINSEED
J—JWAR
2000-01
2000-01
WRB
WRG
WRG
WRG
WRBG
WRGL
WRGJ
WRGB
4 0 4 8 12
Km

Fig. 4.12

TABLE 4.7 (a)

First Crop Only

Blocks	1990-91	2000-01
MEJA	W	W
KORAON	W	W
MANDA	W	W
URUWA	W	W

First two Crops Only

Blocks	1990-91	2000-01
MEJA	WR	WR
KORAON	WR	WR
MANDA	WR	WR
URUWA	WR	WR

First Three Crops Only

Blocks	1990-91	2000-01
MEJA	WRG	WRG
KORAON	WRG	WRG
MANDA	WRG	WRG
URUWA	WRB	WRB

First four Crops Only

Blocks	1990-91	2000-01
MEJA	WRGL	WRGL
KORAON	WRGJ	WRGJ
MANDA	WRGB	WRGB
URUWA	WRBG	WRBG

A – ARHAR B – BAJRA G – GRAM J – JOWAR L- LINSEED R – RICE W - WHEAT

Table 4.7 (b)
CROP-COMBINATION RANKING

	1990-91				2000-01			
Blocks	Ist Ranking crop	IInd Ranking crop	IIIrd Ranking crop	IVth Ranking crop	Ist Ranking crop	IInd Ranking crop	IIIrd Ranking crop	IVth Ranking crop
MEJA	Wheat 44.44 %	Rice 27.60 %	Gram 16.37 %	Linseed 7.55 %	Wheat 47.12 %	Rice 34.31 %	Gram 14.90 %	Linseed 7.48 %
KORAON	Wheat 50.53 %	Rice 45.51 %	Gram 17.83 %	Jowar 9.60 %	Wheat 63.12 %	Rice 55.58 %	Gram 16.27 %	Jowar 8.08 %
MANDA	Wheat 49.55 %	Rice 44.87 %	Gram 13.26 %	Bajra 10.48 %	Wheat 45.60 %	Rice 28.04 %	Gram 16.12 %	Bajara 9.11 %
URUWA	Wheat 50.29 %	Rice 31.45 %	Bajra 25.18 %	Gram 12.72 %	Wheat 52.09 %	Rice 27.62 %	Bajara 27.52 %	Gram 9.58 %
Proposed Crop Combination Regions	Meja - WRGL Koraon - WRGJ Manda - WRGB Uruwa - WRBG				Meja - WRGL Koraon - WRGJ Manda - WRGB Uruwa - WRBG			

B – BAJRA G – GRAM J – JOWAR L- LINSEED R – RICE W – WHEAT

Table 4.7 ©

CROP COMBINATION REGIONS IN TAHSIL (1990-91)

	CROP COMBINATION REGIONS	BLOCK
1.	WHEAT-RICE-GRAM-LINSEED (WRGL)	MEJA
2.	WHEAT-RICE-GRAM-JOWAR (WRGJ)	KORAON
3.	WHEAT-RICE-GRAM-BAJRA (WRGB)	MANDA
4.	WHEAT-RICE-BAJRA-GRAM (WRBG)	URUWA

CROP COMBINATION REGIONS IN TAHSIL (2000-01)

	CROP COMBINATION REGIONS	BLOCK
1.	WHEAT-RICE-GRAM-LINSEED (WRGL)	MEJA
2.	WHEAT-RICE-GRAM-JOWAR (WRGJ)	KORAON
3.	WHEAT-RICE-GRAM-BAJRA (WRGB)	MANDA
4.	WHEAT-RICE-BAJRA-GRAM (WRBG)	URUWA

4.7 Crop Concentration

Crop Concentration is another method for measuring the concentration of individual crops and their role in the regional economy[15]. The analysis and the description of the spatial distribution of various crops is only a qualitative one and does not yield a clear and accurate picture of the degree of concentration of various crops in different parts of the study area. The quantitative approach describing the spatial pattern of various crops is useful only for a general understanding of the distributional aspects of crops and the agriculture types, but it is not useful for agricultural planning, which requires accurate and statistically and objectively derived values of crop distribution in the region. Hence, to measure the precise and accurate distribution of various crops in the region quantitatively and objectively, the concept of crop concentration has been used. It enables one to compare and associate different crop distributions on a uniform scale.[16] With the help of such method, one can arrive at meaningful generalization in crop geography. One can identify crops or live-stock or agri-cultural enterprises, which are highly localized as against the more widespread ones in their distribution. Hence, the concept of crop concentration provides accurate measure of the spatial distribution of crops based on the objective quantitative technique.

The most popular statistical technique, which has been used by several scholars like Florence [17], Chisholm [18] Bhatia[19], etc to measure the concentration of various crops in different region is the "Location Quotient" or the 'Coefficient of Localization'. But various scholars have used this technique as modified by Singh[20]. This technique has been used in the Study Area to measure the concentration of various crops. In the present study, crop concentration has been computed by using the equation, which is

known as the "Crop Concentration Index" and is expressed as follows:

C I = (Pae / Par) x 100

Where CI = Crop Concentration Index (or location quotient);

'Pae' = Percentage of Crop 'a' to the total harvested area in an aerial unit; and

'Par' = Percentage of the Crop 'a' to the total harvested area in the entire region,

Using the above formula, the crop concentration values for various crops have been derived at block level and are shown in the tables (4.8 – 4.13).

The highest concentration area under wheat, as depicted in figure(4.13) is seen in Koraon block, while very low concentration of this crop is seen in Manda block in 1990-91. Whereas in 2000-01, higher concentration of wheat is recorded in Koraon block and very low concentration of this crop is recorded in Uruwa block of Meja tahsil.

The highest concentration of area under rice is recorded in Koraon block in 1990-91 and 2000-01 both, whereas the lowest concentration of Rice was recorded in Uruwa block in 1990-91 and 2000-01 both (Fig 4.14). The highest concentration of area under gram is recorded in Meja block in 1990-91, whereas very low concentration of this crop is located in Uruwa block. But in 2000-01, highest concentration of gram is recorded in Manda block and very low concentration of this crop is recorded in Uruwa block of Meja tahsil (Fig 4.15). The highest concentration of area under linseed is recorded in Meja block in 1990-91, whereas very low concentration of this crop is located in Uruwa block in 1990-91. In 2000-01, (PLATE 13 A) highest concentration of linseed is recorded in Manda block and very low concentration is recorded in Uruwa block (Fig 4.16). The highest concentration of area under bajra is recorded in Uruwa block in 1990-91 and 2000-01 both. Whereas the lowest concentration of bajra was recorded. in Koraon block in 1990-91 and 2000-01 both.

Table 4.8

Crop Concentration of Wheat in Meja Tahsil : (1990-91)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	36.60	102.95
2	KORAON	36.76	103.40
3	MANDA	34.08	95.86
4	URUWA	34.97	98.36
% Area under the Wheat to the total harvested Area of the Tahsil		35.55	

Crop Concentration of Wheat in Meja Tahsil : (2000-01)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	36.45	100
2	KORAON	38.71	106.20
3	MANDA	36.13	99.12
4	URUWA	36.12	99.09
% Area under the Wheat to the total harvested Area of the Tahsil		36.45	

Source : - Statistical Bulletins, District Allahabad 1990 & 2000

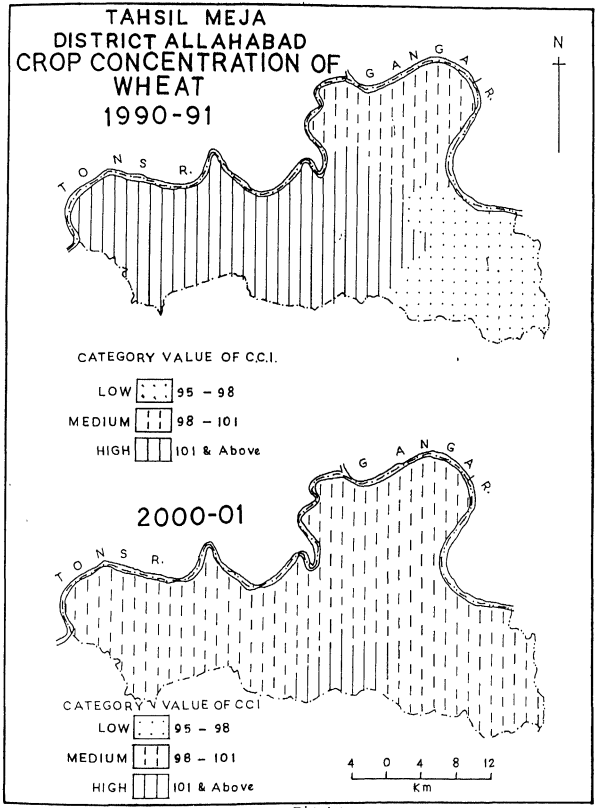

TAHSIL MEJA
DISTRICT ALLAHABAD
CROP CONCENTRATION OF
WHEAT
1990-91
N
G A N G A R.
T O N S R.
CATEGORY VALUE OF C.C.I.
LOW 95 - 98
MEDIUM 98 - 101
HIGH 101 & Above
2000-01
G A N G A R.
T O N S R.
CATEGORY VALUE OF CCI
LOW 95 - 98
MEDIUM 98 - 101
HIGH 101 & Above
4 0 4 8 12
Km

Fig. 4.13

Table 4.9

Crop Concentration of Rice in Meja Tahsil : (1990-91)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	22.72	90.23
2	KORAON	33.11	131.49
3	MANDA	30.86	122.55
4	URUWA	21.87	86.85
% Area under the Rice to the total harvested Area of the Tahsil		25.18	

Crop Concentration of Rice in Meja Tahsil : (2000-01)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	26.54	109.39
2	KORAON	34.09	140.51
3	MANDA	22.21	91.54
4	URUWA	19.08	78.64
% Area under the Rice to the total harvested Area of the Tahsil		24.26	

Source : - Statistical Bulletins, District Allahabad 1990 & 2000

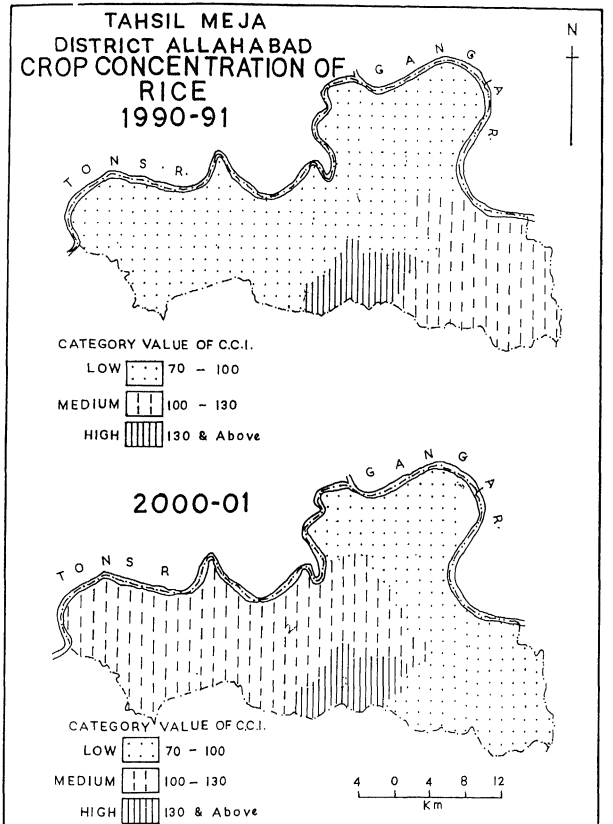

TAHSIL MEJA
DISTRICT ALLAHABAD
CROP CONCENTRATION OF
RICE
1990-91
N
G A N G A R.
T O N S R.
CATEGORY VALUE OF C.C.I.
LOW 70 – 100
MEDIUM 100 – 130
HIGH 130 & Above
2000-01
G A N G A R.
T O N S R
CATEGORY VALUE OF C.C.I.
LOW 70 – 100
MEDIUM 100 – 130
HIGH 130 & Above
4 0 4 8 12
Km

Fig. 4.14

Table 4.10

Crop Concentration of Gram in Meja Tahsil : (1990-91)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	13.48	120.89
2	KORAON	12.97	116.32
3	MANDA	9.12	81.79
4	URUWA	8.84	79.28
% Area under the Gram to the total harvested Area of the Tahsil		11.15	

Crop Concentration of Gram in Meja Tahsil : (2000-01)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	11.53	109.80
2	KORAON	9.97	94.95
3	MANDA	12.78	121.71
4	URUWA	6.64	63.23
% Area under the Gram to the total harvested Area of the Tahsil		10.5	

Source : - Statistical Bulletins, District Allahabad 1990 & 2000

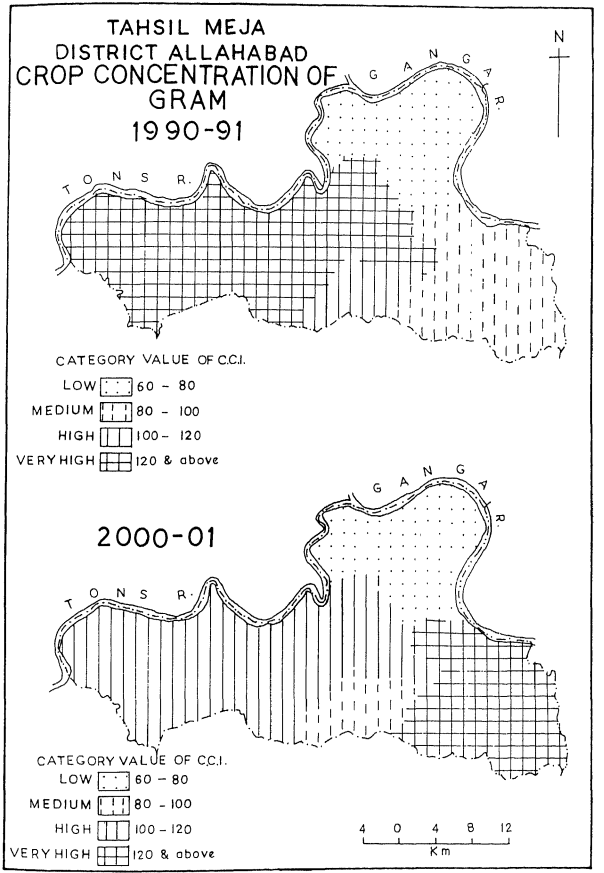

TAHSIL MEJA
DISTRICT ALLAHABAD
CROP CONCENTRATION OF
GRAM
1990-91
N
G A N G A R.
T O N S R.
CATEGORY VALUE OF C.C.I.
LOW 60 - 80
MEDIUM 80 - 100
HIGH 100 - 120
VERY HIGH 120 & above
2000-01
G A N G A R.
T O N S R.
CATEGORY VALUE OF C.C.I.
LOW 60 - 80
MEDIUM 80 - 100
HIGH 100 - 120
VERY HIGH 120 & above
4 0 4 8 12
Km

Fig. 4.15

Table 4.11

Crop Concentration of Linseed in Meja Tahsil : (1990-91)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	6.21	165.15
2	KORAON	2.35	62.5
3	MANDA	3.83	101.86
4	URUWA	0.02	0.53
% Area under the Linseed to the total harvested Area of the Tahsil		3.76	

Source : - Statistical Bulletins, District Allahabad 1990 & 2000

Crop Concentration of Linseed in Meja Tahsil : (2000-01)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	5.78	130.47
2	KORAON	2.29	51.69
3	MANDA	6.79	153.27
4	URUWA	0.24	5.41
% Area under the Linseed to the total harvested Area of the Tahsil		4.43	

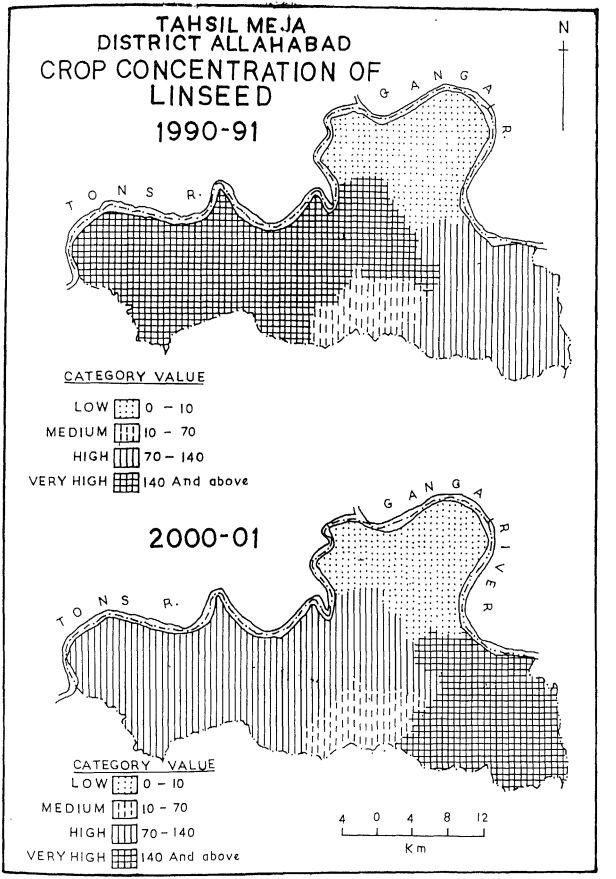

TAHSIL MEJA
DISTRICT ALLAHABAD
CROP CONCENTRATION OF
LINSEED
1990-91
N
G A N G A R.
T O N S R.
CATEGORY VALUE
LOW 0 – 10
MEDIUM 10 – 70
HIGH 70 – 140
VERY HIGH 140 And above
2000-01
G A N G A
R I V E R
T O N S R.
CATEGORY VALUE
LOW 0 – 10
MEDIUM 10 – 70
HIGH 70 – 140
VERY HIGH 140 And above
4 0 4 8 12
Km

Fig. 4·16

Table 4.12

Crop Concentration of Bajra in Meja Tahsil : (1990-91)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	5.34	60.95
2	KORAON	1.34	15.29
3	MANDA	7.21	82.30
4	URUWA	17.51	199.88
% Area under the Bajra to the total harvested Area of the Tahsil		8.76 -	

Source : - Statistical Bulletins, District Allahabad 1990 & 2000

Crop Concentration of Bajra in Meja Tahsil : (2000-01)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	5.32	60.11
2	KORAON	1.45	16.38
3	MANDA	7.22	81.58
4	URUWA	19.08	215.59
% Area under the Bajra to the total harvested Area of the Tahsil		8.85	

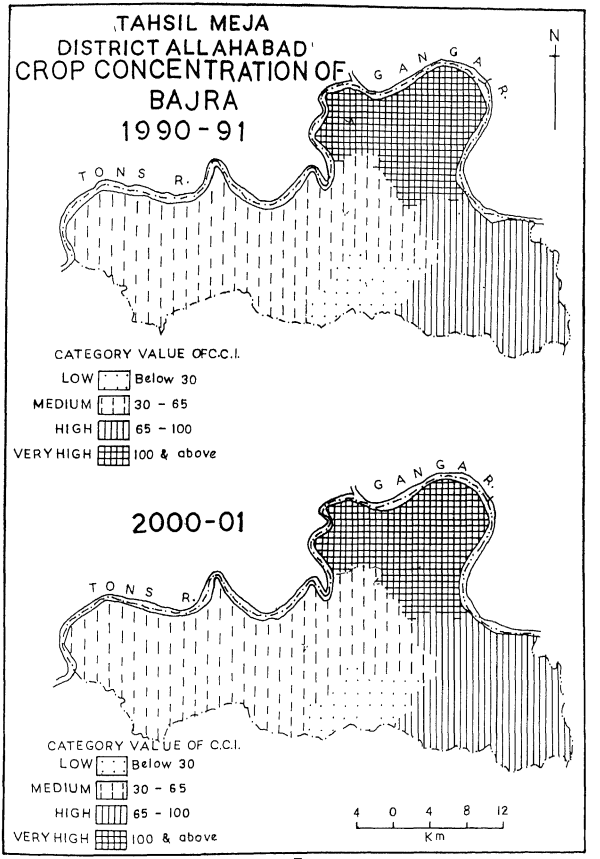

TAHSIL MEJA
DISTRICT ALLAHABAD
CROP CONCENTRATION OF
BAJRA
1990-91
N
G A N G A R.
T O N S R.
CATEGORY VALUE OFC.C.I.
LOW Below 30
MEDIUM 30 - 65
HIGH 65 - 100
VERY HIGH 100 & above
2000-01
G A N G A R.
T O N S R.
CATEGORY VALUE OF C.C.I.
LOW Below 30
MEDIUM 30 - 65
HIGH 65 - 100
VERY HIGH 100 & above
4 0 4 8 12
Km

Fig 4·17

Table 4.13

Crop Concentration of Jowar in Meja Tahsil : (1990-91)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	4.02	95.03
2	KORAON	6.99	165.24
3	MANDA	3.15	74.46
4	URUWA	4.95	117.02
% Area under the Jowar to the total harvested Area of the Tahsil		4.23	

Source : - Statistical Bulletins, District Allahabad 1990 & 2000

Crop Concentration of Jowar in Meja Tahsil : (2000-01)

S No.	BLOCKS	Percentage of Area under crop to the Total harvested area	Percentage of Crop Concentration
1	MEJA	3.11	84.28
2	KORAON	4.95	134.14
3	MANDA	3.30	89.43
4	URUWA	4.80	130.08
% Area under the Jowar to the total harvested Area of the Tahsil		3.69	

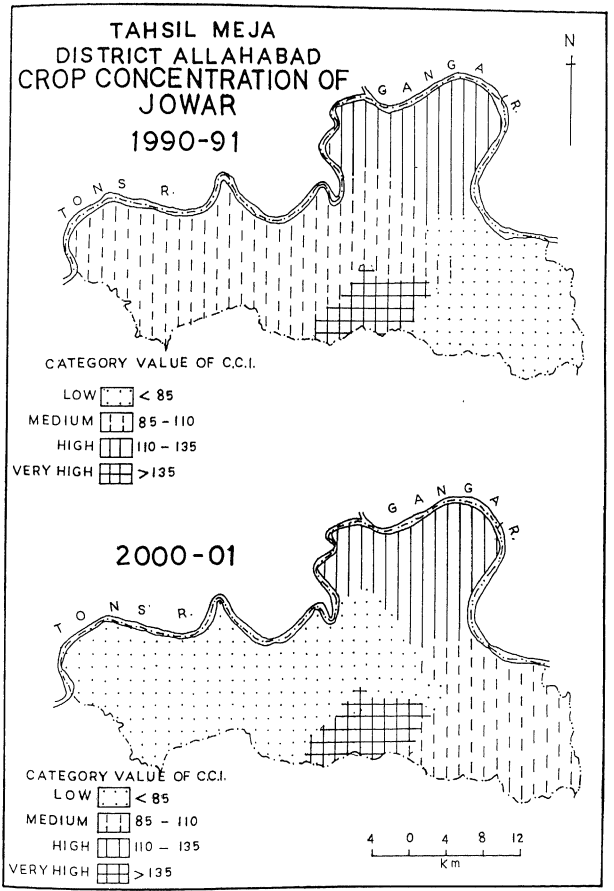

TAHSIL MEJA
DISTRICT ALLAHABAD
CROP CONCENTRATION OF
JOWAR
1990-91
N
G A N G A R.
T O N S R.
CATEGORY VALUE OF C.C.I.
LOW < 85
MEDIUM 85 - 110
HIGH 110 - 135
VERY HIGH >135
2000-01
G A N G A R.
T O N S R.
CATEGORY VALUE OF C.C.I.
LOW < 85
MEDIUM 85 - 110
HIGH 110 - 135
VERY HIGH >135
4 0 4 8 12
Km

Fig. 4.18

Koraon block while very low concentration of this crop is seen in Manda block in 1990-91(Fig. 4.17). In 2000-01 highest concentration of Jowar is recorded in Koraon block, while the low concentration of this crop is recorded in Meja block of the tahsil. Remaining parts of the tahsil depict moderately high to low crop concentration. (Fig. 4.18)

4.8 Land Holding Pattern

The agricultural census has defined an operational holding as "all land which was partly or wholly used for Agricultural Production and was operated as one technical unit by one person alone or with others without regard to title, legal form, size or location "[21]. It means that an agricultural holding is a technical unit, whether that is wholly or partly cultivated and no matter whether it is operated by one or more than one individual or household .

The material progress of a region is dependant on efficient and viable agrarian economy, which in turn is dependant on a sound agricultural system. The structure of operational holdings, conditions the growth pattern of agricultural economy. In fact, the small farming unit acts as an obstacle in the sound agricultural development while their large sizes facilitate it. [22]

The study area is dominated by small operational holdings. 53.37 percent of the total holdings are less than 2 ha in size (1990-91) and their percentage (59.14) in 2000-01, shows the impact of fragmentation of operational holdings dominated during the last decade (vide table 4.14)

In the category of 2-5 ha are included 27.47 percent holdings (1990-91), whereas the percentage of operational holdings above 5 ha is barely 19.16%

The functional holdings are very small and consists of tiny plots distributed widely in the area. This hardly allows the use of modern and innovative farm inputs and thus hinders the process of agricultural development in the area. The operational land holdings ranging between 2 to 5 hectares constitutes 7.33% total households and 27.47% of land holdings in 1990-91, while in 2000-01 the size of land holdings ranging between 2 to 10 hectares constitutes 7.18% of total households and 35.19% of land holdings while the large land holdings above 5 hectares share only 1.79% of total households and 19.16% of land holdings, whereas in 2000-01, the big land holdings above 10 hectares share only 27% of total households and 5.67% of land holdings (Fig. 4.19). However, there is slight change in the land holding pattern from 1991-2001, particularly in favour of small holdings due to the growing pressure of population on land and continuing process of fragmentation of land holdings in the tahsil. A sizable part of the big holdings is still under tenants and share-cropping . This unequal distribution of agricultural lands leads to a number of problems like landless labourers, massive unemployment , land lordship, low agricultural output, labour problem, strained relations between rich and poor etc.

Due to the increasing population demands, high living costs, scarcity, poverty, deprivation etc, the joint family system has almost disappeared leaving behind a trail of nuclear families. This has led to fragmentation of primarily large holdings into small and segregated ones, which hardly allow the use of innovative technology and inputs and the ultimate result is the low agricultural production. Almost the entire area suffers from this social problem.

It is necessary to take up long-term policies to change the structural and the technical conditions that are now prevailing in our agricultural setup in order to increase the agricultural production as well as to improve the miserable conditions of rural peasantry.

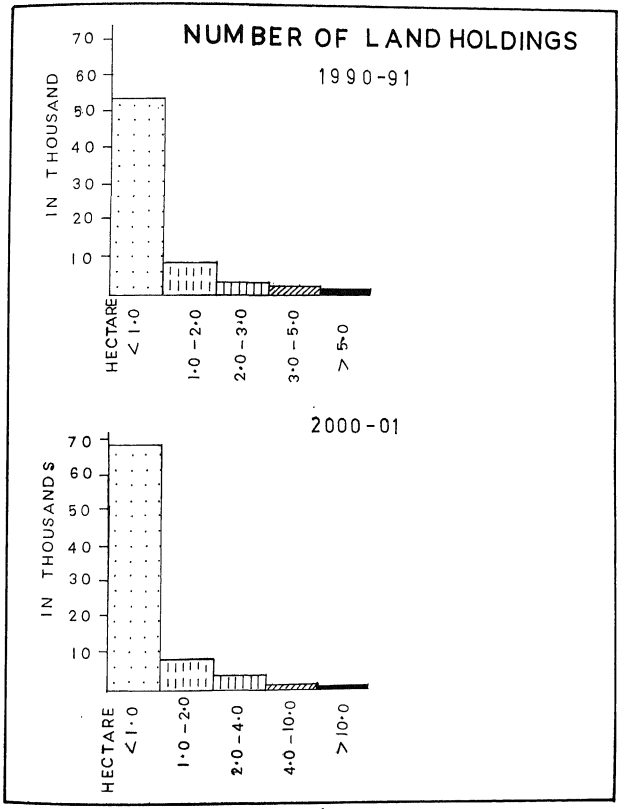

NUMBER OF LAND HOLDINGS
1990-91
IN THOUSAND
70
60
50
40
30
20
10
HECTARE
< 1·0
1·0 – 2·0
2·0 – 3·0
3·0 – 5·0
> 5·0
2000-01
IN THOUSANDS
70
60
50
40
30
20
10
HECTARE
< 1·0
1·0 – 2·0
2·0 – 4·0
4·0 – 10·0
> 10·0

Fig. 4·19

Table 4.14

(a) Land Holding Pattern in Tahsil Meja (1990-91)

S. No.	Size of Holdings OR Size of land in hectares	No. of Households	Area of land holdings (Hect.)	Percent of Households	Percent of land holdings
1.	Below 1	54513	18418	77.66	31.67
2.	1 - 2	9283	12625	13.22	21.70
3.	2 - 3	3016	7939	4.30	13.64
4.	3 - 5	2131	8045	3.03	13.83
5.	More than 5	1254	11141	1.79	19.16
	TOTAL	70197	58168	100	100

(a) Land Holding Pattern in Tahsil Meja (2000-01)

S. No.	Size of Holdings OR Size of land in hectares	No. of Households	Area of land holdings (Hect.)	Percent of Households	Percent of land holdings
1.	Below 1	67430	23042	80.71	37.41
2.	1 - 2	9898	13383	11.84	21.73
3.	2 - 4	4333	12064	5.19	19.58
4.	4-10	1658	9611	1.99	15.61
5.	More than 10	221	3492	0.27	5.67
	TOTAL	83540	61592	100	100

Source : Statistical Year book, district Allahabad – 1990 & 2000

4.9 Irrigation:

The gross anomaly and uncertainty involved in the incidence, amount and distribution of rainfall, have always necessitated the artificial watering of crops in the tahsil. Adequate, timely and dependable supply of water is the basic need for agriculture. In the tahsil almost 80 to 90% of the rainfall is concentrated in the four monsoon months. This leads to greater runoff and wastage of rainwater particularly, when proper storage facility is not available, The mischances of monsoons quite often lead to drought conditions. Under such circumstances, irrigation becomes crucial for agriculture.

The irrigation invariable plays a decisive role in agricultural economy, because it serves the dual purpose by safeguarding the crops against the damages and destruction caused by the failure of rains and by increasing yield of crops even in normal years. [23]

However there is no sharp spatial variation in measures and extent of irrigation facilities as in the tahsil. Depending upon the soil cover and water resources, Meja tahsil carries about 50700 ha of net sown area, of which only 29420 hectares is irrigated. The total irrigated area in the tahsil has increased from 19921 hectares in 1990-91 to 29420 hectares in 2000-01. The spatial pattern of irrigated area is shown in Table no. 4.15 and Fig. 4.22 and various sources of irrigation are shown in Table 4.16, (Fig. 4.21)

Canals are the chief means of irrigation in Meja tahsil, accounting for 76.49 percent (2000-01) of the total irrigated area (PLATE 14 A). The other sources of irrigation in the tahsil are tube-wells (Fig. 4.20), wells, ponds and lakes and others, which account for 16.11 percent, 4.71 percent, 1.40 percent, 1.29 percent of the total irrigated area in 2001, respectively. (PLATE 14 B)

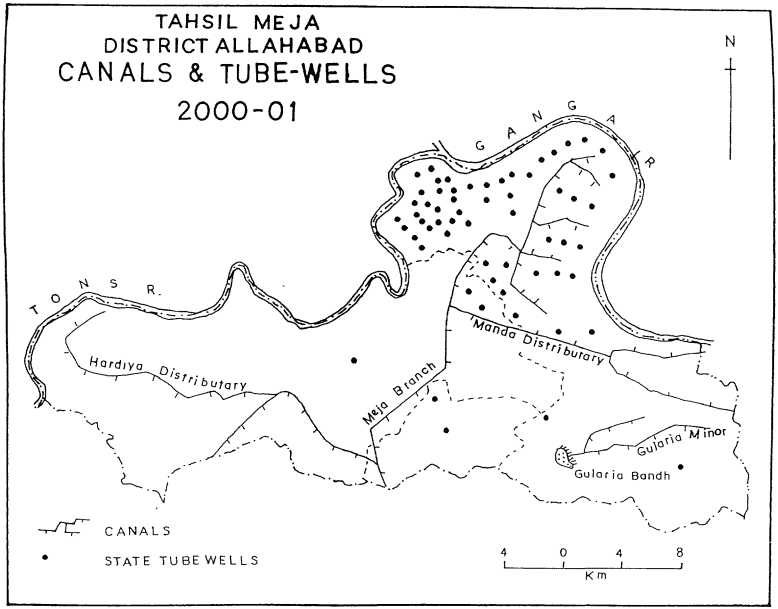

TAHSIL MEJA
DISTRICT ALLAHABAD
CANALS & TUBE-WELLS
2000-01
N
G A N G A R.
T O N S R.
Hardiya Distributary
Meja Branch
Manda Distributary
Gularia Minor
Gularia Bandh
CANALS
STATE TUBE WELLS
4 0 4 8
Km

Fig. 4·20

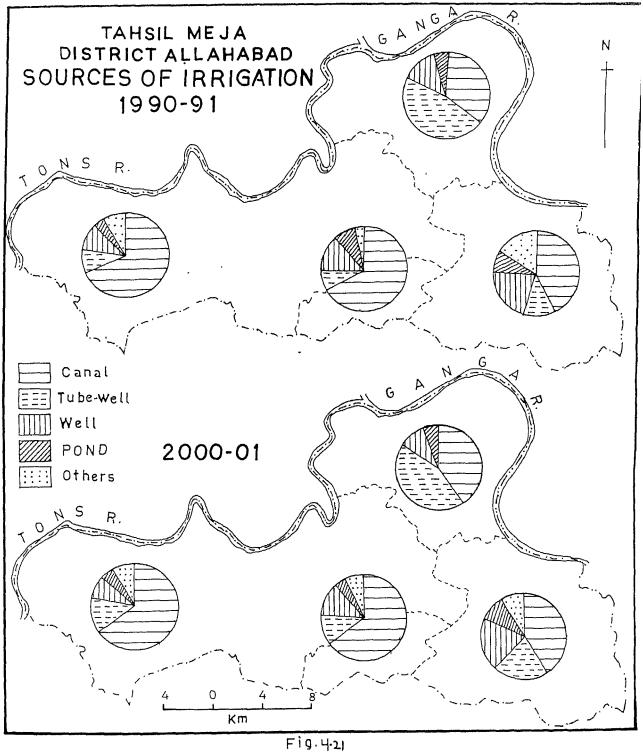
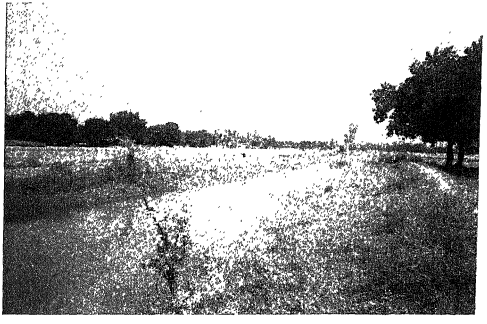
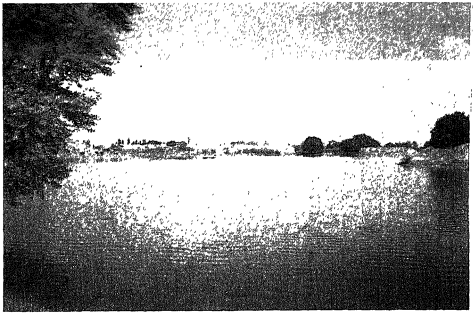

TAHSIL MEJA
DISTRICT ALLAHABAD
SOURCES OF IRRIGATION
1990-91
GANGA R.
TONS R.
N
Canal
Tube-Well
Well
POND
Others
2000-01
GANGA R.
TONS R.
4 0 4 8
Km

Fig. 4.21



(A) IRRIGATION CANAL IN MANDA BLOCK



(B) POND AS A SOURCE OF IRRIGATION IN MANDA BLOCK

PLATE NO - 14

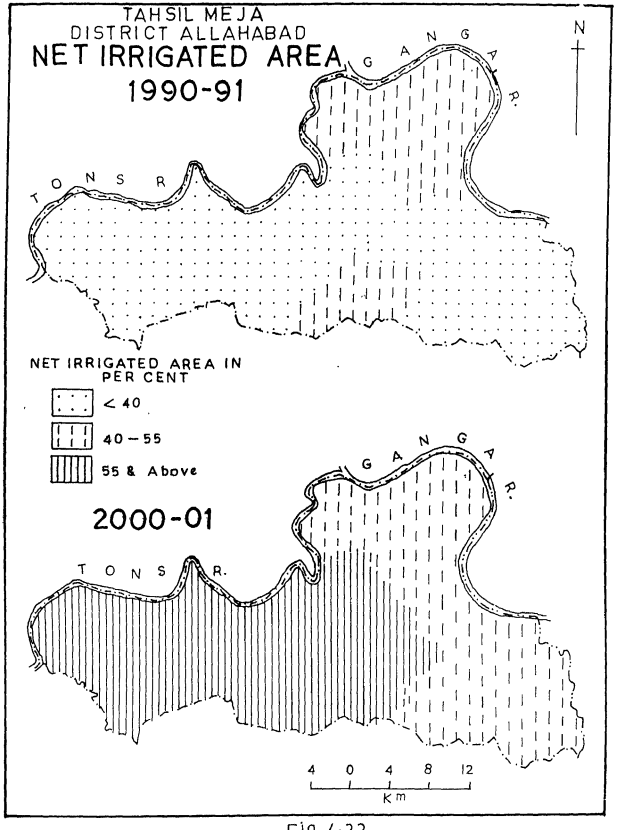

TAHSIL MEJA
DISTRICT ALLAHABAD
NET IRRIGATED AREA
1990-91
G A N G A R.
T O N S R.
N
NET IRRIGATED AREA IN PER CENT
< 40
40 – 55
55 & Above
2000-01
G A N G A R.
T O N S R.
4 0 4 8 12
Km

Fig. 4.22

Whereas in 1990-91, canal being the chief source of irrigation in the tahsil, contribute 70.27 percent of the total irrigated area. The other sources of irrigation in the tahsil – tube-wels, wells, ponds and lakes etc, others which account for 20.13 percent, 5.90 percent, 1.12 percent, 2.58 percent of the total irrigated area respectively. However, in 1990-91, tubewells were used to irrigate about 21.4 percent of the total irrigated area but their share has considerably gone down due to dense network of canals (Table 4.16)

The blocks of Meja, Manda, Koraon are mainly dependant upon canal irrigation while Uruwa block have facilities of both canals and tubewells. The study area is largely dependant on canal irrigation. Here, the Belan canal system is spread over the entire area. The main distributaries of the Belan canal are the Meja and Manda distributaries.

4.10 Uses of Fertilizers and Implements

Manures and fertilizers play an important role in increasing agricultural productivity and production. Fertilizers supply plant nutrients in concentrates and readily available form and help higher yield. With the application of chemical fertilizers, the HYV seeds give good results.

The manures and fertilizers play the same part in relation to the soil as food in relation to the body. Just as a well-nourished body is capable of the maximum effort, well-nourished soil will have the best fertility . Since the land is limited, it is high time that more fertility in fields and less fertility in the home should be given high priority.[24] The limited cultivable area and the mounting pressure of population however, necessitate the increase in the per unit area yield of crops. The green and animal manures fairly improve the physical conditions of the soils, while the chemical fertilizers increase the supply of essential nutrients like nitrogen, phosphorus and potash to the soils [25].

Table 4.15

(a) Land irrigated by different sources in Meja Tahsil - 1990-91

S No.	IRRIGATION SOURCE	Irrigated Area (In hectares)	%age of Total Irrigated area
1	Canals	13998	70.27
2	Tubewels	4012	20.13
3	Wells	1174	5.90
4	Ponds & Lakes	225	1.12
5	Others	512	2.58
	TOTAL	19921	100.00

(b) Land irrigated by different sources in Meja Tahsil - 2000-01

S No.	IRRIGATION SOURCE	Irrigated Area (In hectares)	%age of Total Irrigated area
1	Canals	22502	76.49
2	Tubewels	4741	16.11
3	Wells	1388	4.71
4	Ponds & Lakes	411	1.40
5	Others	378	1.29
	TOTAL	29420	100.00

Source : The statistical Bulletin, District Allahabad 1190-91 & 2000-01

Table 4.16

(a)Sources of Irrigation in Tahsil Meja - 1990-91

S No.	BLOCKS	Net irrigated Area (Hects.)	Sources of Irrigation (Area irrigated by..)					% of total irrigated area
			Canals	Tubewells	Wells	Ponds and Lakes etc	Others	
1	Meja	8354	7896	137	182	31	109	41.93
2	Koraon	1293	1200	15	55	19	3	6.49
3	Manda	4123	2766	200	639	118	400	20.70
4	Uruwa	6151	2136	3660	298	57	-	30.88

(b)Sources of Irrigation in Tahsil Meja - 2000-01

S No.	BLOCKS	Net irrigated Area (Hects.)	Sources of Irrigation (Area irrigated by..)					% of total irrigated area
			Canals	Tubewells	Wells	Ponds and Lakes etc	Others	
1	Meja	15257	14164	534	252	99	209	51.86
2	Koraon	1764	1622	49	63	9	19	5.99
3	Manda	6261	3976	979	91	244	150	21.28
4	Uruwa	6138	2740	3179	160	59	-	20.87

Source : The statistical Bulletin, District Allahabad 1190-91 & 2000-01

The use of Chemical fertilizers in the tahsil has increased from 262.06 kgs per hectare in 1990-91 to 378.88 Kgs per hectare in 2000-01. The block-wise figures are shown in Table 4.18 which also attests to this fact. Uruwa block tops this list in the use of fertilizers with 213.6 Kg per unit in 2001, in the tahsil. Then comes Meja 87.25, Manda 74.64 and Koraon 3.39. The distribution of Nitrogen, Phosporus and Potash fertilizers in various blocks is shown in Table No. 4.17. The use of Nitrogenous fertilizers in tahsil is 4277 MTs, Phosphorus is 1040 MTs and Potash 160 MTs in 1991, whereas in 2000-01, the use of Nitrogenous fertilizers is 7251 MTs, Phosphorus is 1336 and Potash is 114 MTs. The use of nitrogenous is highest in Uruwa bock (2953 MTs), while lowest use of Nitrogenous fertilizers is in Koraon block with 195 MTs in 2001, the use of phosphorus is highest in Uruwa block with 539 MTs and lowest is in Koraon block with 38 MTs, the use of Potash is highest in Uruwa block with 50 MT, while lowest use is in Meja (40 MT) in the tahsil. The use of all fertilizers has increased since 1991 to 2001 in the Meja tahsil.

In view of the above facts, immediate action is required in three directions :-

1. Promotion of biogas technology with animal waste for the twin purposes of energy and manures.

2. There is an urgent need for change over to organic farming for sustainable development of the regional agriculture.

3. Popularization of soil testing, which is an important tool to advise farmers for balanced and efficient use of fertilizers.

Similarly, the use of sophisticated agricultural implements has also increased over the years and their distribution is shown in Table 4.19

Table 4.17

(a) Distribution of Fertilizers in Meja Tahsil 1990-91 (Units in MTs)

SL No.	BLOCKS	Nitrogenous	Phosphorus	Potash
1	Meja	1307	176	61
2	Koraon	92	18	4
3	Manda	948	171	32
4	Uruwa	1930	675	63
	Total	4277	1040	160

Source :- District Statistical Bulletin 'Allahabad' State Planning Institute, UP 1990-91

b) Distribution of Fertilizers in Meja Tahsil 2000-01 (Units in MTs)

SL No.	BLOCKS	Nitrogenous	Phosphorus	Potash
1	Meja	2531	493	40
2	Koraon	195	38	2
3	Manda	1572	266	22
4	Uruwa	2953	539	50
	Total	7251	1336	114

Source :- District Statistical Bulletin 'Allahabad' State Planning Institute, UP 2000-01

Table 4.18
Uses Of Fertilizers in Meja Tahsil

S L	Blocks	Kg / Hectare		
		(1990-91)	(1995-96)	(1996-97)
1	MEJA	55.39	81.46	87.25
2	KORAON	2.71	3.54	3.39
3	MANDA	52.86	56.58	74.64
4	URUWA	151.1	139.1	213.6
	TOTAL	262.06	280.68	378.88

Source : District Statistical Bulletins ' Allahabad '. State Planning Institute U.P. 1990, 1995, 1996

Table 4.19
(a) Use and Availibility of Agricultural Implements in Tahsil Meja – (1990-91)

S No.	BLOCKS	Plough Wooden	Plough Iron	Advanced Cultivators	Advanced Threshing Machne	Sprayers	Advanced Sowing Implement	Tractors
1	Meja	9741	1094	96	1188	173	6627	162
2	Koraon	973	128	7	94	9	697	19
3	Manda	5956	720	69	491	108	4236	111
4	Uruwa	4005	563	116	1324	313	3817	155
	Total	20675	2505	288	4285	603	15377	447

Source : The Statistical Bulletin, district Allahabad 1990

(b) Use and Availibility of Agricultural Implements in Tahsil Meja – (2000-01)

S No.	BLOCKS	Plough Wooden	Plough Iron	Advanced Cultivators	Advanced Threshing Machne	Sprayers	Advanced Sowing Implement	Tractors
1	Meja	10730	1358	132	1393	31	7402	265
2	Koraon	1072	159	10	110	15	780	32
3	Manda	6561	894	94	576	170	4738	180
4	Uruwa	4412	1013	158	1551	494	4270	252
	Total	22775	3424	394	3630	710	17190	729

Source : The Statistical Bulletin, district Allahabad 2000

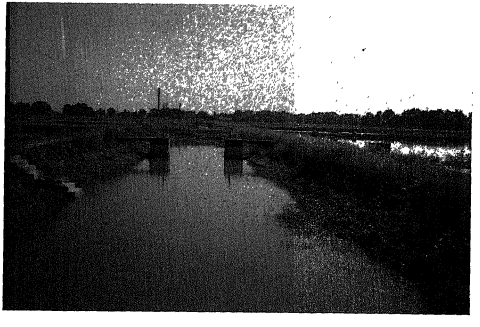
4.11 Animal Hubandry

The animal husbandry is an integral part of agriculture and has major contributions in the rural economy. In the study region, the farmers used to domesticate cattle to provide draught force for cultivation and transportation, rather than to obtain milk and meat for their food. But the 'white revolution' has made phenomenal change in their outlook and rural folks are showing great interest in high breeds of cows and she-buffaloes to augment milk output and supplement their income. Similarly improved breeds of goat now provide three to four times more milk than ordinary one. But due to increasing use of farm machines, the number of drought animal is declining on the other hand, farmers are taking great interest in dairy farming to supplement their income especially near the urban areas, where dairy products are in great demand.

Meja Tahsil has a satisfactory position with respect to cattle population . But unfortunately, the livestock wealth of the tahsil is quite unproductive, frail and fragile, principally due to poor feeding and breeding management and careless treatment given to them. They have to live on grazing (PLATE 15 A). Consequently, they become weak, unhealthy, and un-productive. Among all the cattle, cow family occupies a prime position (1,47,322) in strength in 2000-01, while in 1990-91 it was (138768) in strength (vide table 4.20).

Buffaloes are next to cows in the tahsil, whose population is about 31499 in 2000-01 and it was 28,316 in 1990-91(vide Table 4.20). The goats family has a population of 27,466 in 2000-01, which was 26901 in 1990-91. The sheep has population of 19,221 in 2000-01 & 16,079 in 1990-91 (PLATE16 A). The strength of pigs, horses and pony are shown in Table 4.20 and comparison of the year 1990-91 and 2000-01 is also shown . A significant trend has been noticed in case of milch cattle to improve their breed through artificial insemination and increase the production of milk . It is clear that the number of cows, buffaloes, sheep and goats is large in tahsil, but the quality and quantity of their product is very poor. The average

(A) GRAZING (KORAON BLOCK)



(B) FISH PONDS AT SORAON IN URUWA BLOCK

PLATE NO -15

(A) A SHEEP FLOCK IN MEJA TAHSIL

(B) CHAFF CUTTING MACHINE USED A FARMER

PLATE NO- 16

quantity of milk production of Cows, Buffaloes and goat is very low. The number of veterinary hospital and livestock services is shown in Fig 4.23.

Fishes, rich in protein and minerals may provide nutritious diets to the rural folk. The rivers and ponds of the Tahsil may be developed to encourage pisci-culture in the region. Even ponds are also developed for fish-farming as depicted in (PLATE 15 B).

Table 4.20

(A) LIVESTOCK POPULATION IN TAHSIL MEJA – 1990-91

S. No.	BLOCKS	TOTAL BOVINE	TOTAL BUFFALOES	TOTAL SHEEP	TOTAL GOATS	TOTAL HORSES & PONY	TOTAL PIGS	OTHER ANIMALS
1	Meja	50075	12869	5969	9115	285	2189	4967
2	Koraon	3360	849	445	1021	23	148	417
3	Manda	32334	7518	3550	5621	159	2494	3919
4	Uruwa	52999	7080	6115	11144	258	2734	6235
	TOTAL	138768	28316	16079	26901	725	7565	15538

(B) LIVESTOCK POPULATION IN TAHSIL MEJA – 2000-01

S. No.	BLOCKS	TOTAL BOVINE	TOTAL BUFFALOES	TOTAL SHEEP	TOTAL GOATS	TOTAL HORSES & PONY	TOTAL PIGS	OTHER ANIMALS
1	Meja	53320	14316	7135	9306	305	3008	5367
2	Koraon	3598	944	535	1043	25	206	450
3	Manda	34297	8363	4231	5739	170	3394	4234
4	Uruwa	56107	7876	7320	11378	276	3746	6736
	TOTAL	147322	31499	19221	27466	776	10354	16787

Source : The Statistical Bulletin, district Allahabad 1990 & 2000

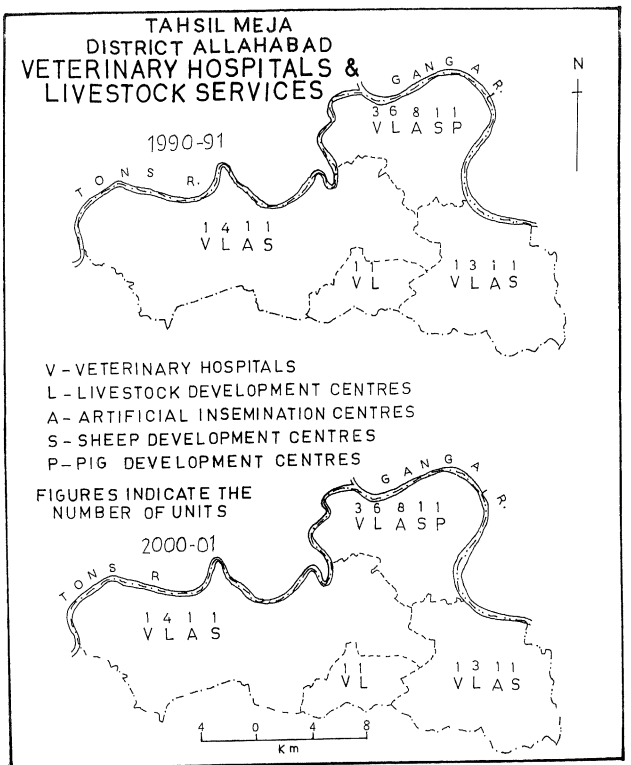

TAHSIL MEJA
DISTRICT ALLAHABAD
VETERINARY HOSPITALS &
LIVESTOCK SERVICES
1990-91
GANGA R.
3 6 8 1 1
V L A S P
TONS R.
1 4 1 1
V L A S
1 1
V L
1 3 1 1
V L A S
N
V - VETERINARY HOSPITALS
L - LIVESTOCK DEVELOPMENT CENTRES
A - ARTIFICIAL INSEMINATION CENTRES
S - SHEEP DEVELOPMENT CENTRES
P - PIG DEVELOPMENT CENTRES
FIGURES INDICATE THE
NUMBER OF UNITS
2000-01
GANGA R.
3 6 8 1 1
V L A S P
TONS R.
1 4 1 1
V L A S
1 1
V L
1 3 1 1
V L A S
4 0 4 8
Km

Fig. 4·23

4.12 MAJOR AGRICULTURAL PROBLEMS:-

The temporal and spatial analysis of various aspects of agriculture in Meja Tahsil reveals that this sector is gradually picking up, but in view of the growing demands of an increasing population, the pace of agricultural development is not up to the mark. There are various problems and constraints, which hinder the growth of agricultural sector. The main problems are listed as follows:-

1. **Size of Land Holdings** : - The size of land holdings of the Tahsil is too small for many agricultural operations and does not yield enough of income for purchase of irrigation water, fertilizers, pesticides and above all the necessary modern machines. The area was dominated by Zamindars, pattidars and Talequedar, who held lion's share of the agricultural land and realized exorbitant rents (revenue) from tenants by adopting the harshest methods. Even after the abolition of Zamindari, their descendants still held a major part of the agricultural land in Tahsil. The unequal distribution of the agricultural lands led to a number of problems like landless labourers, massive unemployment, low agricultural output, labour problems, social tensions between the rich and the poor etc. Here, not only the holdings are small, but they are also fragmented, involving a lot of wastage of labour in movement from one plot to another. It also results in waste of land in boundaries and creates security problems. Under such a system farmers are unable to make improvements in land.

2. **Soil Erosion** : - Soil erosion is not a very serious problem at the moment but its continuous menace is leading to a loss of soil fertility and decreasing crop yield. The soil erosion problem is an outcome of a combination of several factors like the soil structure, water run-off, farming practices and the like. It is quite perceptible in

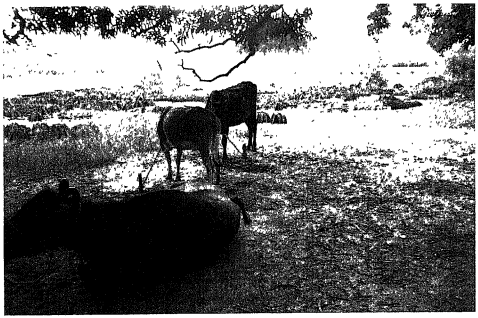
the ravine banks of the Tons and the Lapri rivers. Similarly, areas along the river banks and the nallas are also facing the menace of soil erosion.

3 **Agricultural Labour** : - Agricultural labour plays a significant role in the agricultural development of a region. In fact, 78.2% of the total working force of the tahsil is engaged in agricultural pursuits. There has been, decrease in agricultural workers in recent years due to increasing use of new technology and agriculture implements. At block level, the proportion of agriculture workers to total workers is highest in Koraon Block (92.3%). The lowest percentage of agricultural workers are found in Uruwa block (74.8%). The region is facing an acute shortage of agricultural laborers due to their migration to urban areas to earn their livelihood.

4 **Illiteracy** : - The percentage of illiteracy in Meja Tahsil is very high (63.99%) in 2001. As the vast majority of people belonging to the schedule caste and women are deprived of educational facilities. The highest percentage of illiteracy is in Koraon block (70.1%) and the lowest percentage of Illiteracy is in Uruwa block (53.8%). The female illiteracy is much higher than the male illiteracy due to traditional conservatism and dogmas. This is one of the major constraints in rural development in general and agricultural planning in particular. Though the Government has launched Adult-Education program for eradication of Illiteracy, the socio-economic conditions act as impediments in achieving the goals. The dropouts of children are very high at the school level.

5 **Marketing of Agricultural products** : - There is no proper marketing channel in the rural areas because of the middle-men, who exploit the poor farmers. An effective and efficient marketing system can certainly facilitate the interactions between producers and consumers and can fetch maximum returns to the farmers (PLATE 17 A). The agricultural marketing facilities are deplorably poor in the region and the malpractices in agriculture marketing are quite common. In spite of the

(A) VEGETABLE MARKET - MEJA



(B) COW DUNG USED AS A FUEL

PLATE NO-17

network of inspecting officials, farmers are invariably at the mercy of unscrupulous traders or brokers, since they have neither storage facilities nor an access to reliable markets, they fall victims of exploitation such as arbitrary deduction for alleged poor quality of produce, faulty measurement etc due to illiteracy and ignorance of the farmers. There is urgent need to impart proper training to farmers so that they can check the mal-practices and get remunerative prices for their commodities and efficient marketing system can certainly serve best, the interest of the producers and the consumers.

6 There is excessive stress on the production of food crops, whereas cash crops are insignificant. The cropping pattern should be more diversified, so that it can give better returns to the farmers. Another problem is that there is no crop specific fodder crop for cattle or other animals, which largely depend on the residue of the food crops. There is need for development of animal husbandry which has to be properly fed and looked after.

7 There are still large patches of wasteland as well as fallow lands, which are lying unused in the tahsil. There is need for proper and scientific system of land-use, which can put such types of land to remunerative uses. In fact, such lands can be utilized for social forestry and agro-forestry.

8 Due to inadequate irrigational facilities, the production and productivity in the tahsil is low. As irrigation is a essential input for improved agriculture, irrigation facilities have to be encouraged by adopting water-harvesting practices.

9 Use of manures and fertilizers is quite scanty. Cow-dung, which gives the best and rich manure is burnt as fuel owing to the scarcity of cooking fuel (PLATE 17 B). In fact there is need for development of eco-farming and greater use of bio-fertilizers such as compost manures, green manuring as well as bio-fertilizers

10 There is paucity of good quality seeds, which are available to the farmers. Seeds, which are often moth-eaten and are not high-yielding varieties, effect the productivity. There is need for HYV technology for increasing agricultural production.

11 A vast majority of farmers use traditional tools and implements, which are not adequate for efficient agricultural operations(PLATE 16 B). The wooden plough and the bullock carts are still most commonly used and the poor farmers often rely on their age-old agricultural implements(PLATE 18 A). Even the threshing of paddy crop is being done manually (PLATE 18 B). There are no proper plant protection facilities, as a consequence thereof, wastage, pest and diseases and improper storage facilities cause heavy losses to the farmers. In fact, for HYV technology, plant protection facilities are essential, because these new varieties are highly susceptible to pests and diseases.

12 Lastly, the vagaries of the monsoons work as a retarding factor in agricultural development. The excess of rainfall or its deficiency or long dry spells cause severe damage to crop harvesting.

4.13 PLANNING FOR AGRICULTURE DEVELOPMENT

In view of the aforesaid problems, some suitable policy suggestions for agriculture planning are being made here, which can pave the way for viable and accelerated development of agricultural and allied activities in Meja Tahsil.

The agriculture development planning has the main objectives of greater production through restructuring of cropping pattern and generation of sizeable employment to create greater work opportunity for the rural labour force. Besides, such planning also encourages agro - based small scale industries for augmenting rural income. The agricultural production may be increased either by increasing the net sown area or by adopting intensive cultivation, while the former needs reclamation of forests, pastures, barren and culturable wastelands, the latter is

(A) FARMER PLOUGHING HIS FIELD (MANDA BLOCK)

(B) THRESHING PADDY CROP (MANDA BLOCK)

PLATE NO - 18

based by HYVs seeds, better irrigation system, proper utilization of chemical fertilizers, insecticides, etc. As there is no good chance for increasing the net sown area in the tahsil. Maximum effort should be made to increase agricultural intensity by introducing multiple cropping through the liberal use of facilities like irrigation, fertilisers, new varieties of seeds etc.

1. In the process of agriculture development of the Study Area, the first priority should be given to expanding the agriculture area by reclamation of culturable wastes, usar, barren and fallow lands etc. This task should be entrusted to the soil conservation department, which should be advised to finish the reclamation work within stipulated time period.
2. Soil conservation is a thrust area of today. The soil Testing Laboratory plays a significant role in this direction, because it helps recommending the required quantity and quality of fertilisers. Another important factor, which affects the fertility of soils, is the soil erosion. In order to check this menace, the soil conservation department has chalked out a comprehensive plan. This includes adopting some precautionary measures like making bunds; planting shrubs and bushes across the gully channels; planting soil - binding vegetation along the river banks and building slopy banks along the rivers to protect bank erosion etc. In fact, there is need for linking farm growth to eco-preservation [26]
3. The existing network of irrigational facilities should be expanded to meet the present and future demands by opening new canals and boring new tube - wells, installing pump sets, digging masonry wells and tanks,' wherever possible.
4. Use of high yielding varieties of seeds is necessary step of modern agriculture to augment crop production and crop yields. In fact the success of Green revolution essentially goes to the increasing use of high yielding varieties of seeds and chemical fertilizers. The use of HYVs seeds has led to self sufficiency in food as against usual shortage.
5. Cropping belts should be identified in the study area in accordance with the physical qualities of the land, proper uses of the soils and availability of

water.[27] Crops requiring good lands should be grown in good soil water belt, crops with average requirements in medium grade soil - water belt and the crops with lesser requirements in low grade soil - water belt. Those parts of the study area, which do not have enough amount of water or good quality of soils, should be utilized for coarse crops like millets, maize etc. A suitable crop combination and crop rotation should be practiced in the area.

6. The cropping pattern should also be adjusted accordingly keeping in view the quality of soils, availability of irrigation, pattern of consumption and demand.

7. The practice of multiple and cash cropping should be encouraged by providing adequate irrigational facilities, inputs, storage and marketing facilities to ensure better utilization of land and human resources. This will help improve the income and living standard of the farmers and at the same time, it will enrich and strengthen the agricultural sector to meet its own demands as well as the demands of the manufacturing and service centers.

8. The wages of the agricultural labourers should be adequately raised, so that they are encouraged to work efficiently and honestly. This will certainly increase the labour and land productivity and will improve the income and living standard of the farmers as well as of the labourers. However, the practice of bonded labour , although not so serious in the area should also be abolished.

9. Due to unequitable distribution of land resources and emerging socio - economic conditions suitable land reforms restoring the tillers rights over the land should be implemented. No doubt, land reforms like the U.P. Zamindari Abolition and Land Reforms Act, 1950 (U.P. Act No. I of 1951) the U.P. Consolidation of Holdings Act 1953; U.P. Large Land Holdings Act 1957 and U.P. Imposition of ceiling of Land Holdings Act 1960 have given some relief to the peasants but a lot is yet to be done. This needs plugging the loop holes in our legislation system and remove socio-cutural and other constraints which impede its speedy implementation.

10 It has been found that judicious use of Fertilisers and manures in combination with other improved practices, is the most effective means of increasing agricultural productivity per unit area. Unfortunately farmers have been provided little knowledge on the type and quantity of fertilisers to be used for different crops and soil types.

Fifth Five Year Plan introduced plant protection measures by using insecticides, pesticides and weedicides to protect the crops in fields and grains in ware houses. There is need for integrated plant and seed protection measures.

11. There is urgent need for improving farm technology, which is appropriate to ecological as well as socio-economic conditions of the farmers and can raise agricultural productivity.

12. The farmers of the area are mostly illiterate, uneducated and untrained. Their traditional and uninnovative attitudes and behaviours prevent them from venturing into the modern commercial farming and animal husbandry. Therefore it is urgently needed that sufficient facilities for training and educating the poor farmers into the use of new methods and inputs are created.

13. Concerned government officials particularly those based at the block headquarters should also be adequately trained in the modern farming techniques, so that they can easily and sincerely guide the farmers.

14. Recently a new scheme for crop insurance has been launched by the government to compensate the loss and damage of the crops due to bad weather and natural calamities. But due to lack of awareness, the farmers have not responded well.

15. The animal husbandry development is sine quo non for agricultural economy. The small and marginal farmers as well as the agricultural labourers should be encouraged to take up animal husbandry for meeting the demand for animal products. Besides poultry development and fishery development should be promoted for diversifying the rural economy and raising income levels of the weaker sections of the society.

16. In view of the increasing demand for forest produce, there is an urgent need for farm-forestry and social forestry. It will help in restoring ecological balance which has been unwittingly disturbed. There is urgent need for providing infrastructural facilities and supporting services to the agricultural sector.

The National Commission on Agriculture has rightly observed : "the policy of agricultural development should have the objective to promote growth, stability and social justice and result in a continuous improvement in output, employment and income. These have to be seen in their totality because of their interdependence, so that the implementation of these policies leads to coordinated development of the entire agricultural sector and makes the optimum utilization of the available resources possible" [28].

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CHAPTER – 5

SPATIAL PLANNING FOR INDUSTRIAL DEVELOPMENT

5.1 Introduction

T.S. Papola and V.N. Mishra have rightly observed "Rural industrialization is as much an essential ingredient of the rural development strategy as industrialization is a development strategy for the country."[1] In fact small scale and household industries play a strategic role in respect of reducing regional disparities and keeping restraint on the R.-U. Stream by providing gainful employment in rural areas.[2] The Planning Commission has stressed upon the development of small scale industries including cottage and household industries since the beginning of the First Five Year Plan. In the Third Five Year Plan, the concept of rural industrialization was formulated to meet the contemporary requirements, and a recommendation was made to integrate the village industries with the rural economy, while the significance of the adoption of intermediate technology and economic viability was clearly spelt out in the Fourth Five Year Plan in order to ensure concrete and positive results in rural industrialization [3]. The Sixth Five Year Plan, in particular proposed to achieve it by: (i) generating opportunities for fuller employment by revitalizing and developing, the existing traditional and other small scale industries; (ii) raising the earnings of rural artisans and handloom weavers, and (iii) promoting their development in rural areas and small towns.[4] To make available, the administrative, technical and marketing services to the millions of geographically widely dispersed and unorganized artisans and small entrepreneurs, two programmes were launched; District Industries Centre (DIC), at the district level and Rural Marketing and Service Centres (RMCs) at the block level. Each RMC was to keep a card for each village artisan in the block and provide services such as

inputs, credit, marketing, improved tools and techniques.[5] "The RMCs were to be linked with higher–tier government cooperatives marketing organizations at state and national levels and later given support for expansion.[6]

Accordingly District Industries Centre (DIC) was established at Allahabad and is currently functioning in the campus of the Carpentary School. Here an attempt has been made to examine the existing industrial structure of Tahsil Meja vis-à-vis the government policies and their implementation in the Study Area.

5.2 INDUSTRIAL DEVELOPMENT: AN OVERVIEW

Before the arrival of the British, India had a well developed structure of cottage and village industries, which contributed in a significant way to the regional/national economy. But they heavily suffered under the foreign rule and languished because of administrative non-support. However, the government of India launched the process of industrialization as conscious and deliberate policy of economic growth "as a base for the growth of the primary sector, as a catalyst agent for the development of infrastructure, as a stimulant to generation of technologies through R&D effort ... and as a growth multiplier".[7] Unfortunately these policy initiatives could not be translated into action-oriented programmes at block/village levels. Even the existing rural industrues are facing the risk of their survival.

The Small Industries Development Organisation (SIDO) set up in 1954 has made comprehensive policy packages for development of Small Scale and Cottage Industries.[8] Under its auspices several industrial estates (both urban and rural) have been set-up. Meja Tahsil was also selected for setting up a Mini Industrial Estate at Meja in 1992-93. (Fig. 5.1) It is located just opposite the Spinning Mill (closed recently) (vide PLATE 21B) over an area of 3 acres. Under the Project 51 plots were developed at the Government cost in 1992-93, of which only 22 plots

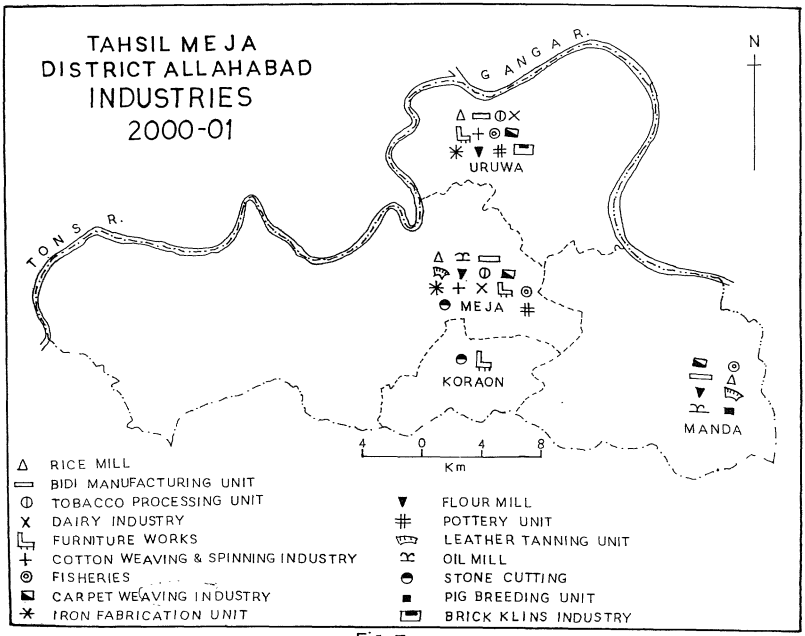

TAHSIL MEJA
DISTRICT ALLAHABAD
INDUSTRIES
2000-01
GANGA R.
TONS R.
N
URUWA
MEJA
KORAON
MANDA
4 0 4 8
Km
RICE MILL
BIDI MANUFACTURING UNIT
TOBACCO PROCESSING UNIT
DAIRY INDUSTRY
FURNITURE WORKS
COTTON WEAVING & SPINNING INDUSTRY
FISHERIES
CARPET WEAVING INDUSTRY
IRON FABRICATION UNIT
FLOUR MILL
POTTERY UNIT
LEATHER TANNING UNIT
OIL MILL
STONE CUTTING
PIG BREEDING UNIT
BRICK KLINS INDUSTRY

Fig. 5.1

could be allotted to the applicants free of cost, till date. They were also provided the loans and subsidies under rules. However, only the following 5 industries could be set-up as shown in Table 5.1

TABLE – 5.1

MINI INDUSTRIAL ESTATE, MEJA: PROGRESS (2002)

Sr. No.	S.S.UNIT	AREA IN SQMT.	YEAR OF ESTABLISHMENT	PRESENT STATUS
1	Rakesh Krishi Yantra Udyog	128	1992-93	Working
2	Raj Industries	256	1993-94	Not working
3	Mishra Jali Work	128	1995-96	Not regular working
4	Kumar Namkeen	128	1997-98	Not regular working
5	M/s Dev Industries	128	1997-98	Not working

Source: District Small Scale Industries Office, Allahabad and Field Survey (November, 2002).

Another Mini Industrial Estate is being planned at Uruwa over an area of 5 acres (Fig. 5.1). But it is still in limbo, perhaps due to the dismal performance of the Mini Industrial Estate, Meja. In fact, it raises serious questions on the government efforts for rural industrialisation itself. "It is not sufficient to have right policies. They must be backed by well thought out practical arrangements to make

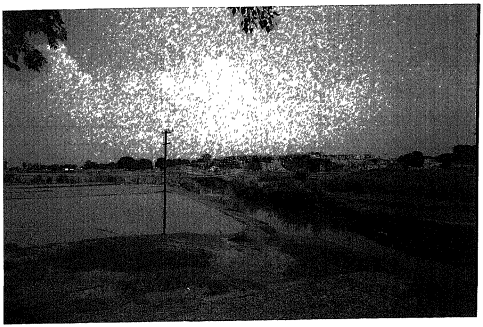
the writ of policy run and run smoothly[9]." The planning and implementation machinery has to be galvanised and made more accountable for the shortfalls, if any. In fact, they are not comprehensive packages as claimed and are divorced from ground realities. Most of the rural industries are confined to traditional village crafts catering to the needs of the local people such as carpentry or oil-pressing or handlooms, etc. Many of such enterprises are run with small threshold rural population. Moreover, the average size of a rural settlement in the study Area is too low to expect the types of relationship visualized in the rural industrial packages.[10] "It seems necessary to have a minimum size of village before it could contain a sizeable industrial activity.[11] Most of the rural settlement of the Study Area have too low threshold population required for a particular industrial enterprise. That is why the selection of industrial enterprises should be restricted to the identified growth foci/service centres, which have requisite threshold population of their own as well as their service areas.

"To sum up, the process of industrialization has not generated sufficient growth potential either in terms of output or in terms of employment, and what is really serious is that the rate of growth of industrialisation has been declining with every decade. The question of choice of technique has, therefore, to be examined anew with reference to employment.[12]"

5.3 POTENTIAL FOR INDUTRIAL DEVELOPMENT IN THE AREA

5.3.1 INDUSTRIAL RESOURCES

Raw materials constitute the main based for rural industries. The industrial units generally use local raw materials like agricultural products (foodgrains, oil seeds, pulses, sugarcane, and cotton (PLATE 9B)etc. Forest products (timber and tendu leaf), animal products (dairy and allied products) and sand stone (PLATE 19A). The decentralized sector of small scale and cottage industries can sustain



(A) SANDSTONE NEAR MANDA ROAD

(B) COTTON GINNING AT SIRSA

PLATE NO -19

itself on local materials and can not compete with large scale industries for imported raw materials. It is certainly an important factor for sustenance of private small scale enterprises in the region.

5.3.2 INFRASTRUCTURAL FACILITIES

The infrastructural facilities play an important role in the growth and development of small scale industries. If the material as well as the output is transported from and to other places, the proximity to transport connectivity is an important determinant of industrial activity in a central village/service centre. Besides, the transport facilities, telecommunication facilities, storage facilities, institutional facilities like financial services and banks, electricity and techno-services are also included under infrastructural facilities, which help in building a sound industrial base.

5.3.3 ASSISTANCE AND INCENTIVES

As early as 1978 a scheme was launched by the Reserve Bank/IDBI/National Banks to provide composite loans up to Rs. 25,000/- per artisan at a single point of delivery[13]. Now the New Ministry of Small Scale Industries and Agro and Rural industries (set up in October, 1999) provides a comprehensive package of loans and incentives[14]. For promotion of small scale rural industries, the Prime Minister's Self-employment Scheme is also in operation in both urban and rural areas of Uttar Pradesh. An unemployed youth can get an industrial project for Rs. 1.00 lakh. Of the total industrial projects under the Prime Minister's Self Employment Schemes, 22.5 percent projects are reserved for the SC/ST candidates and 27% for the OBC candidates. In fact, there is no dearth of funds for launching new Small Scale Enterprises in Meja Tahsil. Perhaps there is lack of awareness and entrepreneurship, which stands in the way.

5.3.4 TECHNOLOGICAL AND MANAGERIAL SKILLS

In the absence of technological and managerial support, the rural industries are not able to compete with their urban counter parts. Bipin Bihari has rightly observed: "There are three distinct factors which intimately impinge upon the technological status of small scale industries. They are: (a) distinct patterns of small scale production organization; (b) imitative rather than innovative technology, and (c) poor availability of managerial techniques[15]. Without proper know-how the production in the small scale industrial sector can not face the market competition. Due to poor quality products with high price tag, they fail to make a requisite visibility in the market and later fall victim to industrial sickness and closure. The Mini Industrial Estate, Meja, provides a telling evidence where the industrial units started and fell sick or even before their birth they met an abortive tragedy.

5.4 PATTERN OF INDUSTRIAL DEVELOPMENT

In 2001 there were 349 industrial units, which provided employment to 1,647 workers in Meja Tahsil (vide Table 5.2). They are mostly private house-hold establishments, of which 85 per cent establishments are located at Sirsa, Bharatganj, Ramnagar, Manda, Uruwa, Unchdeeh, Mahewa Kalan, Nahwai, Manpur, Barha Kalan, Meja, Rajapur and other large market centres.

In terms of both industrial units and industrial workers Uruwa Block holds the first rank, followed by Meja, Manda and Koraon. In fact, Sirsa Town itself has as many as 61 industrial units (flour mills – 10; rice mills – 2; oil presses – 3; bidi works – 01; tobacco works – 3; dairy – 2; furniture – 6; iron works – 2; animal products – 6; pottery – 9; carpet industry – 2; photographers studios – 6; hardware – 4; leather works – 2 and stationery/book binding – 4) (Fig. 5.1). Two important small scale industries namely M/s Rajendra Vishwakarma Works and M/s Jaiswal Mini Rice Mill at

TABLE 5.2

ESTABLISHED/ REGISTERED SMALL SCALE AND COTTAGE INDUSTRIES IN MEJA TAHSIL 2001

Sr. No.	Name of Block	Number of Industrial Units	Number of workers
1	Meja	106	570
2	Manda	96	345
3	Koraon	6	32
4	Uruwa	141	700
	Total Tahsil	349	1,647

Source: Industrial profile, District Industry Centre, Allahabad, 2001

Sirsa deserve special mention. M/s SNV Cement Pipe Manufacturing Industry at Uruwa is also noteworthy. The remaining industrial units of Uruwa block are located at Uruwa, Unchadeeh and other market service centres. The development of Brick-kiln Industry is also seen in Uruwa Block (PLATE 20A).

Bharatganj (Manda Block) is the largest industrial centre with 65 small scale and household industrial units (flour mills – 10; oil mills – 4; bidi works – 20; carpet – 6; tobacco – 4; hardware – 5; leather works – 5; furniture – 4; pottery – 3; cement jali – 2; and dariy –2) (Fig. 5.1). Manda, Mahewa Kalan, Manpur, Nahwai and Chauhari are other centres of small scale and household industries, which are engaged in bidi making, carpet making, dairy industry and other industries meeting local needs. Quarrying is also seen in Manda Block (PLATE 20B).

In Meja Block, Meja is the main industrial centre with about 45 industrial units. It has a Mini Industrial Estate and a Polytechnic. The recent closure of Spinning Mill has given blow to handloom industry. Ram Nagar (Meja

(A) CHIMNEY OF A BRICK -KILN AT URUWA BLOCK

(B) QUARRYING NEAR MANDA ROAD

PLATE NO - 20

Block) is also an important centre with 28 industrial units, of which M/s Vijai Laxmi Rice Mill (Established in 1997) and M/s Vijai Laxmi Enterprises (Established in 2002) derserve mention.

Under the 9th Five Year Plan the District Industry Centre has planned to set up as many as 145 industrial enterprises in Meja Tahsil (vide 5.3). Their employment potential is targeted at 321. It implies that most of these industrial units are being setup under the Prime Minister's Self Employment Scheme with an allocation of Rs. 11.20 lakh for 134 industrial units (Meja Block – 45; Manda Block – 27; Koraon Block – 2 and Uruwa Block – 40) with less than one lakh rupees allocation, while those with more than rupees one lakh are only 11 (Meja Block – 4; Manda Block – 3; and Uruwa Block– 4;). It also includes the industrial units to be set up at the Mini Industrial Estates at Meja and Uruwa.

TABLE – 5.3

TARGET FOR THE DEVELOPMENT OF NEW INDUSTRIAL UNITS AND THEIR EMPLOYMENT POTENTIAL (1997-98 – 2001-02), MEJA TAHSIL

Blocks	Industrial Units with less than Rs. One Lakh allocation			Industrial Units with more than Rs. One Lakh allocation		
	No. of Units	Alllocation (Rs. Lakh)	Employment	No. of Units	Alllocation (Rs. Lakh)	Employment
Meja	45	4.25	105	4	7.25	14
Manda	27	2.70	69	3	6.0	06
Koraon	2	0.25	7	0	0.00	00
Uruwa	40	4.0	115	4	6.00	15
Total Tahsil	134	11.20	286	11	19.25	35

Source: Industrial Profile, District Industry Centre, Allahabad, 1997-98 pp. 133-134

5.5 PROBLEMS OF INDUSTRIAL DEVELOPMENT

A critical appraisal of industrial development in Meja Tahsil highlights the problems, which the Small Scale and Household industries are struggling with. Perhaps the most overriding problem relates to inadequacies of the programmes launched by the government, which are often divorced from ground realities in terms of both local resources and demand potential. The targets and achievements seldom match. The allocation of financial resources is deemed as utilization of funds for the Specific Projects and the achievements are manipulated per stipulated targets. Besides, the help is not commensurate with the requirements, which discourages the entrepreneurs to opt for such help[16]. The Mini Industrial Estate, Meja is a test case of its dismal performance and needs a thorough investigation. Perhaps it is not an exception.

The main objective of rural industrialization is to promote diversification of rural economy and tackle its problems of employment and poverty. But these problems have not been alleviated (PLATE 21 A,B). The target of generating barely 321 jobs under the 9th Five Year Plan through the comprehensive package for developing rural industries in Meja Tahsil is just mockery.

Though proposals are formulated for supporting a programme of appropriate technology for Small Scale and Cottage Industries in rural areas, but nothing substantial is done for translating it into an action programme. TRYSM has proved to be a failed programme.

"The view that decentralised village industries can be aided and promoted bureaucratically from the top without participatory development and government at decentralised levels continues to be held [17].

There is lack of infrastructural facilities particularly power supply, which is not only limited to 6-8 hours per day, but is also erratic and irregular. The power crisis appears to be a hard nut to crack.

(A) WORKERS PROTESTING THE CLOSURE OF THE COTTON MILL, MEJA

(B) U. P. STATE YARN CO. LTD. IN MEJA

PLATE NO - 21

The rural industries face managerial and entrepreneurial problems as they do not have access to markets for their finished products.

The new policy of liberalization has further added to their problems "since the initiation of liberalization regime these industries have come under heavy odds [18]."

Some small scale industries are fighting for their survival as they have fallen victim to sickness, and are unable to face competition from large scale enterprises.

5.6 PLANNING OF INDUSTRIAL DEVELOPMENT

1. For the industrial development of a backward region like Meja Tahsil, the foremost attention should be paid to supporting every existing artisan, village or small enterprise in the area so that it can sustain and expand their enterprises per available resources. "The criteria for providing subsidies therefore, should be related not to the quantum of Capital Investment, but to the number of persons to be employed and the low demand for power and transport [19]."
2. There is an urgent need for identification of the suitable types and scale of new industrial units keeping in view the regional resources and demand potential. As Meja Tahsil is essentiallly an agricultural region, there is ample scope for development of food processing industries. The success of the existing industries like rice mills, flour mills and dal mills provides an evidence. There are great potential resources for expanding the ambit food processing industries by including fruits, vegetables and dairy products. Increased utilisation of fruits and vegetables as well as dairy products by processing units can step up the regional industrialization. In fact, the food processing sector has succeeded in other areas in directly providing employment and industrial growth. Other regional resources like forest

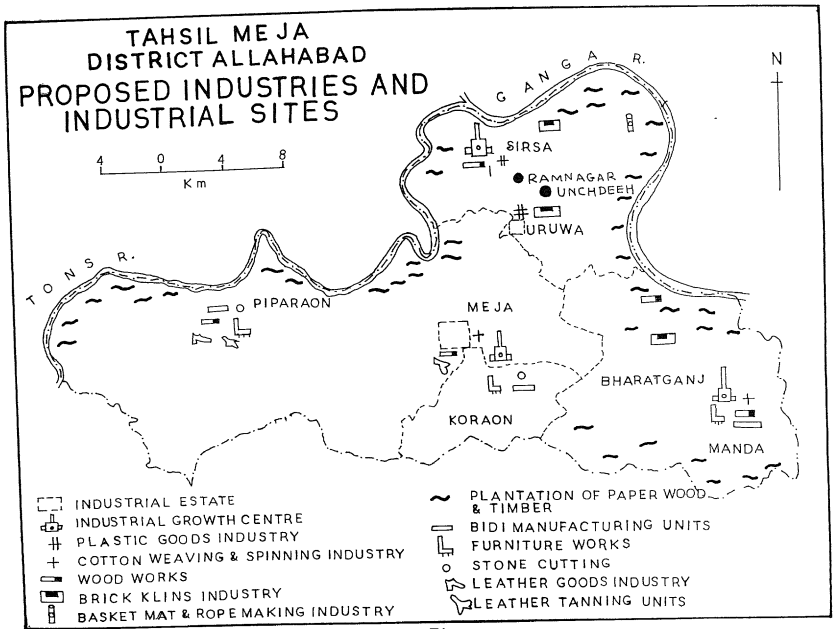

TAHSIL MEJA
DISTRICT ALLAHABAD
PROPOSED INDUSTRIES AND
INDUSTRIAL SITES
4 0 4 8
Km
GANGA R.
N
SIRSA
RAMNAGAR
UNCHDEEH
URUWA
TONS R.
PIPARAON
MEJA
BHARATGANJ
KORAON
MANDA
INDUSTRIAL ESTATE
INDUSTRIAL GROWTH CENTRE
PLASTIC GOODS INDUSTRY
COTTON WEAVING & SPINNING INDUSTRY
WOOD WORKS
BRICK KLINS INDUSTRY
BASKET MAT & ROPE MAKING INDUSTRY
PLANTATION OF PAPER WOOD & TIMBER
BIDI MANUFACTURING UNITS
FURNITURE WORKS
STONE CUTTING
LEATHER GOODS INDUSTRY
LEATHER TANNING UNITS

Fig. 5.2

produce, sand stone (PLATE 19A) and reh etc. can be profitably processed and marketed at higher prices even outside the regional boundaries. Some potential industries which can possibly flourish in Meja Tahsil are depicted (Fig. 5.2).

3. The appropriate locations for various types of industrial units should be identified in the close proximity of existing development foci and market centres.
4. There is need for regular and uninterrupted supply of raw materials and power, which are essential for industrial development.
5. The adequate infrastructural and technological facilities should be made available to the new industrial units, so that they act as catalyst agents for further development of small scale industries in the region.
6. They should be provided necessary organisational and managerial help for overcoming the odds, which come in their way.
7. The adequate financial resources should be made available to the genuine entrepreneurs without subjecting them to bureaucratic red-tapism, which often leads to the labyrinth of corruption and malpractices.
8. There is need for coordinated efforts to sustain the rural industries by their up gradation and modernization, so that they can produce quality products, which meet the challenges of invasion of large scale enterprises. The district industries centre should provide cooperative marketing facilities, technical assistance and appropriate technology development.

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CHAPTER - 6

SPATIAL PLANNING FOR DEVELOPMENT OF SOCIAL FACILITIES

6.1 INTRODUCTION

The UNDP Human Development Report (1997) defines human development as "the process of widening people's choices and the level of well being they achieve, as the core of the notion of human development. But regardless of the level of development, the three essential choices for people are to lead a long and healthy life, to acquire knowledge and to have access to the resources needed for a decent standard of living."[1] The magnitude and quality of the social facilities determine the three essential human choices which, in turn, determine socio-economic development of a civil society. That is why the provision of adequate social facilities to the people has been accepted as a constitutional goal and major objective of our planned development.[2]

The strategy of the Minimum Needs Programme (MNP) comprising of 12 components was launched in the Fifth Five Year Plan for "providing certain minimum social services on a uniform basis in a time-bound manner for socio-economic development of the entire country."[3] But as the MNP failed to click, in 1996 Prime Minister Deve Gowda took a realistic view and reduced them to the following seven components of the Minimum Basic Needs:

(I) Safe Drinking Water in every habitation.

(ii) Provision of efficient primary health care for every group of 5,000 people.

(iii) Provision for housing to the shelter less people.

(iv) Nutritional support to every child from the poor families during pre-school and elementary education.

(v) Fair price shops to supply essential commodities for the Public Distribution System.

(vi) Connectivity to al villages/habitations by providing them all weather roads.

(vii) Adequate arrangements for universal as well as compulsory primary education, especially of women and girl child, in villages, with provision for adult literacy.

It was expected to achieve the following objectives by 2000 A.D.

(a) 100 per cent coverage of provision for safe drinking water in rural and urban areas.

(b) 100 per cent coverage of primary health services.

(c) universilization of primary education.

(d) provision of Public Housing Assistance to all shelter less poor families.

But even today they remain distant goals to achieve. Recently the Parliament has recognized "Right to Education" as a fundamental right and has enacted a legislation for free and compulsory education for all children between 6-14 years of age. The Government has launched the Sarva Shiksha Abhiyan with great fanfare.

Here an attempt has been made to evaluate the performance and spatial impact of the three basic social facilities, viz. education, health and shelter in the Study Area.

6.2 CONCEPT OF SOCIAL FACILITIES

Social facilities as included in the basic minimum services, viz. educational facilities, medical facilities and housing facilities constitute the core programme, which is sine gua non for socio-economic development and enhancement of living conditions and quality of life. In fact, they are not mutually exclusive of each other but are closely interrelated. Safe drinking water, for example, is an essential component of a health progamme, because safe drinking water supply and basic sanitation are vital human needs for health and efficiency. Similarly, educational facilities make people aware of health hazards and diseases and play a significant role in the success of a health program, housing also affects health, because shelter

and quality of housing have a direct impact on health (e.g slums and diseases coexist). In the form of an integrated package for socio-economic development, health is an essential input of social development.

6.3 TYPES OF SOCIAL FACILITIES

The main types of social facilities area as follows :

(I) Supply of Safe Drinking Water- It is an important basic facility and is essential for sustenance of life itself. "An estimated 80% of all diseases and even one-third of deaths in developing countries are caused by the consumption of contaminated water and on an average as much as one-tenth of each person's productive time is sacrificed to water related diseases."[4] The Indian situation is far from satisfactory.

(ii) Health Care Services - Primary Health care implies "an essential health care and universally accessible to all citizens and acceptable to them through their full participation and at a cost that the community and country can afford." [5] It addresses the major health problems of the community through preventive, curative and rehabilitative medical and health services. It is well reflected in the National Health Policy (1983).

(iii) Educational Facilities - Education is the pivot of human resource development. That is why Universalisation of Primary Education (UPE) and Education For All (EFA) are the guiding principles of our National Educational Policy. The 9th Five Year Plan might be called as the corner stone in investment in education. The Tenth Five Year Plan proposals maintain the continued emphasis on universalisation of education and primary education.

(iv) Road accessibility - connectivity to all villages/habitations by providing all-weather roads from every village to the near by market centre/service centre is a vital link for socio-economic development.

(v) Housing facilities - Shelter is deemed as a basic necessity for improving living conditions. That is why the UNO has declared 1987 as the International Year

of Shelter (IYSH). In fact , a global strategy was formulated, with the goal of "Houses For All" by the year 2001. According to the latest estimates, 40.82%of the total households in rural areas and 39.55% in urban areas of india, live in one-room houses and another 30.65% in rural areas and 30.37% in urban areas live in two-room houses.[6] It is a physical shelter with no regard to the quality of housing.

(vi) Sanitation Facility - The concept of sanitation connotes a comprehensive packge, which includes liquid and solid waste disposal, culinary and personal hygiene and domestic as well as environmental sanitation. It reflects quality of life and living conditions. The people in rural areas face higher risks to their health and nutritional health due to lack of sanitation facilities. In view of this grave reality the Tenth Five Year Plan has envisaged acceleration of sanitation coverage among rural population through the Total Sanitation Campaign (TSC) launched in April 1999. It includes construction of household latrines, construction of sanitation complex for women, toilets for schools and toilets for Anganwadis etc.

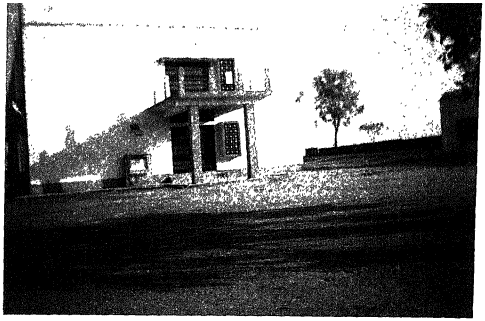
(vii) Energy - The most important single factor which acts as constraint in the socio-economic development of the region is the availability of energy. In fact there is increasing demand of energy for stepping up socio-economic development.

(viii) Other Social Facilities - Other social facilities include institutional as well as credit and banking facilities (PLATE 22B) which facilitate development processes and have a direct bearing on social infrastructure.

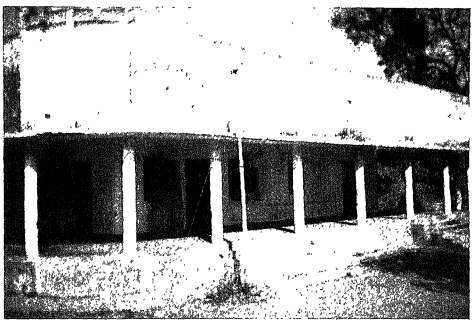
6.4 SPATIAL PATTERNS OF DEVELOPMENT OF SOCIAL FACILITIES

(A) PATTERNS AND TYPES OF EDUCATIONAL FACILITIES

The Tenth Five Year Plan has a vision for development of educational facilities: "Education for all must be one of the primary objectives of the Tenth Plan. The Sarvashiksha Abhiyan which has been launched to achieve this objective (PLATE 23 A) is a strong indication of the country's resolve to give the highest priority to achieve this goal during the Plan period. It should be our resolve that the



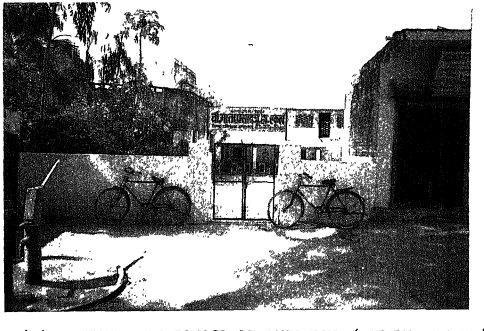
(A) 30 - BED HOSPITAL, MEJA



(B) S.B.I. BRANCH, MEJA

PLATE NO-22

(A) TOTAL LITERACY PROGRAMME (OFFICE) AT MANDA BLOCK



(B) JUNIOR HIGH SCHOOL AT AMILHAVA (URUWA BLOCK)

PLATE NO - 23

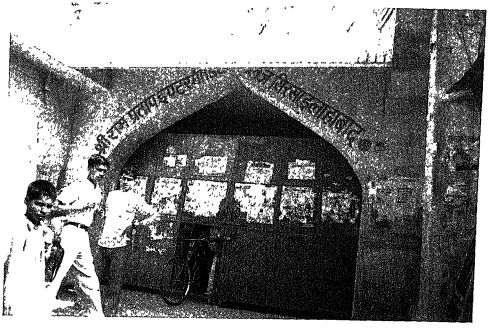
process of integrating our educational system with the economic needs of the people and the nation must begin at the primary school stage itself."[7]

(I) PRIMARY EDUCATION

In the light of the above national goal let us examine the ground realities in the Study Area. The basic education is imparted through the Junion Basic Schools (Classes 1 - 5) (PLATE 23 B) and Senior Basic Schools (Classes 6 - 8). They are maintained by the Zila Parishad. At present there are 232 Junior Basic Schools and 56 Senior Basic Schools (Vide Table 6.1) as compared to 166 Junior Basic Schools and 41 Senior Basics Schools during 1990-91. Their current enrolments are 46,618 students and 7,830 students respectively. They are managed by 552 and 223 teachers respectively. The teacher - student ratio is 1:84 and 1:36 respectively against the norm of one teacher for 40 children for primary and upper primary schools. It appears that the enrolment figures for primary schools have been inflated (1990-91; 18,116 students and 2000-01; 46,618 students to show the impact of Sarvashiksha Abhiyan. The most spectacular increase in primary education is noticeable in Meja Block (1990-91 - 4084 and 2000-01 - 13236), where the number of teachers have increased from 50 to 69 in a decade. In Koraon Block, just 17 teachers are managing 1,798 children in Basic Junior Schools and 7 teachers are looking after 243 students in Senior Basic Schools. The norm of a primary school within one - kilometer of every habitation remains unfulfilled in the Study Area.

(ii) HIGHER SECONDARY EDUCATION

The higher secondary education takes care of classes 9-12 (PLATE 24 A). As per data, the increase in the number of schools (18 to 22) and the teachers (468 to 494) in a decade does not suggest a satisfactory state of affairs, while the number of students increased from 7,190 to 12,644. In higher secondary education Uruwa block has the lion's share - 10 out of 22 higher secondary schools and 244 out of 494 teachers. Of course it has also the highest enrolment (2000-01 - 5,905



(A) INTER COLLEGE AT SIRSA

(B) LALA LAXMI NARAYAN DEGREE COLLEGE, SIRSA

PLATE NO - 24

students). It is followed by Meja, Manda and Koraon blocks. The accessibility of higher secondary schools is poor in the region because 220 villages lie more than 5 kilometers away from the institutions (vide Table 6.2)

(iii) COLLEGE EDUCATION

In the Study Area there is only one Degree College at Sirsa (Uruwa Block). Its name is LALA LAXMI NARAYAN DEGREE COLLEGE (PLATE 24B). As per information given by the Principal the Degree Colleges is teaching B.A. (9 subjects), B.Sc. (6 subjects) and B.Ed. classes, and its current strength of students is 2,400, but unfortuantely, it has barely 21 teachers, one for each subject in Arts and Science and 6 teachers for B.Ed. The Higher Education Department had accepted the norm of 2 Lecturers for every subject and 3 Lecturers for B.Sc. as well as Geography as early as 1991-92. The excessive teaching load is highly unjustified and has a direct impact on the quality of higher education in Meja Tahsil.

(iv) TECHNICAL EDUCATION

Recently, a Polytechnic has been started at Meja. It lacks basic infrastructure facilities and teaching facilities, and is functioning in a casual manner. It belies the hope of imparting vocational education, which can stand them in good stead.

(v) ADULT EDUCATION

Adult education has been placed on a high priority, so that illiterate adults may benefit and may successfully contribute to the socio-economic development of the country. Unfortunately, the programme is not being conducted in a missionary spirit and is belying the cherished hopes in the Study Area, as they have failed to motivate the illiterate adults to acquire basic literary and functional skills.

(vi) WOMEN EDUCATION

To alleviate the sufferings of the women and improve their social conditions, the government policy has a positive approach for extending educational facilities to

TABLE - 6.1

NUMBER OF SCHOOLS, TEACHERS AND STUDENTS IN MEJA TAHSIL

SCHOOLS		JUNIOR BASIC SCHOOLS			SENIOR BASIC SCHOOLS			HIGHER SECONDARY		
BLOCK	YEAR	NO. OF SCHOOLS	NO. OF TEACHERS	NO. OF STUDENTS	NO. OF SCHOOLS	NO. OF TEACHERS	NO. OF STUDENTS	NO. OF SCHOOLS	NO. OF TEACHERS	NO. OF STUDENTS
MEJA	1990-91	50	114	4084	12	17	1293	5	118	2182
	2000-01	69	156	13236	18	58	1568	6	134	3838
KORAON	1990-91	6	12	545	2	3	139	0	10	260
	2000-01	8	17	1798	2	7	243	1	10	398
MANDA	1990-91	36	115	5148	7	23	1132	4	104	1543
	2000-01	70	116	12877	10	44	1925	5	106	2503
URUWA	1990-91	74	246	8339	20	31	1905	9	236	3205
	2000-01	85	263	18707	26	114	4194	10	244	5905
TOTAL TAHSIL	1990-91	166	487	18116	41	74	4469	18	468	7190
	2000-01	232	552	46618	56	223	7930	22	244	12644

SOURCE: ZILA SANKHIKIYA PATRIKA, JANPAD ALLAHABAD 1990 & 2000

TABLE - 6.2 (a)
ACCESSIBILITY OF JUNIOR & SENIOR BASIC SCHOOLS, IN MEJA TAHSIL

		JUNIOR BASIC SCHOOLS			SENIOR BASIC SCHOOLS (GIRLS)			SENIOR BASIC SCHOOLS (BOYS)		
BLOCK	YEAR	IN VILLAGE 1KM	WITHIN 1-5 KM	BEYOND 5 KM	IN VILLAGE 1KM	WITHIN 1-5 KM	BEYOND 5 KM	IN VILLAGE 1KM	WITHIN 1-5 KM	BEYOND 5 KM
MEJA	1990-91	76	50	8	8	26	98	11	16	10
	2000-01	90	38	6	8	26	78	15	18	102
KORAON	1990-91	8	6	2	2	2	8	2	4	8
	2000-01	10	2	1	2	2	10	2	4	8
MANDA	1990-91	60	38	10	3	50	57	9	30	72
	2000-01	75	2	3	3	50	45	9	29	60
URUWA	1990-91	82	6	1	5	36	40	22	36	30
	2000-01	82	8	1	6	35	47	23	34	33
TOTAL	1990-91	226	100	21	18	114	203	44	86	215
TAHSIL	2000-01	257	50	11	19	113	325	49	85	203

SOURCE: ZILA SANKHIKIYA PATRIKA, JANPAD ALLAHABAD 1990 & 2000

TABLE - 6.2 (b)
ACCESSIBILITY OF HIGHER SECONDARY SCHOOLS, IN MEJA TAHSIL

BLOCK	YEAR	HIGHER SECONDARY SCHOOLS (BOYS)			HIGHER SECONDARY SCHOOLS (GIRLS)		
		IN VILLAGE 1KM	WITHIN 1-5 KM	BEYOND 5 KM	IN VILLAGE 1KM	WITHIN 1-5 KM	BEYOND 5 KM
MEJA	1990-91	8	17	100	1	8	124
	2000-01	10	20	105	1	8	124
KORAON	1990-91	2	3	9	-	-	10
	2000-01	2	3	10	1	-	13
MANDA	1990-91	7	30	74	1	17	92
	2000-01	8	30	62	1	17	81
URUWA	1990-91	12	36	42	4	24	60
	2000-01	14	34	43	4	24	63
TOTAL TAHSIL	1990-91	29	86	225	6	49	286
	2000-01	34	140	220	7	49	281

SOURCE: ZILA SANKHIKIYA PATRIKA, JANPAD ALLAHABAD 1990 & 2000

(A) A GROUP OF STUDENTS OF INTERMEDIATE COLLEGE IN MEJA

(B) INTERVIEWING WOMEN REGARDING THEIR PROBLEMS

PLATE NO - 25

women at all levels (PLATE 26 B). The girls are provided free education up to class - 10. In Meja Tahsil, there are some separate junior basic schools, senior basic schools and higher secondary schools for girls, but they are certainly inadequate (PLATE No. 25 B. Most of the girls schools lie beyond 5 Kms. from their villages (vide table 6.2), which is a limiting factor for promotion of female education and literacy.

(vii) SC/ST EDUCATION

The Government has made provisions for free education for the SC/St students for raising their literacy level and for improving their educational qualifications. They are also provided free books and scholarships. But it has not yielded the desired results and is certainly a matter of concern for all.

PROBLEMS OF EDUCATION

The major problems of educational development in the Study Area are as follows:

(I) The educational facilities are unevenly distributed on the block basis and there are many spatial gaps in their distribution pattern.

(ii) They have not been provided with basic infrastructural facilities.

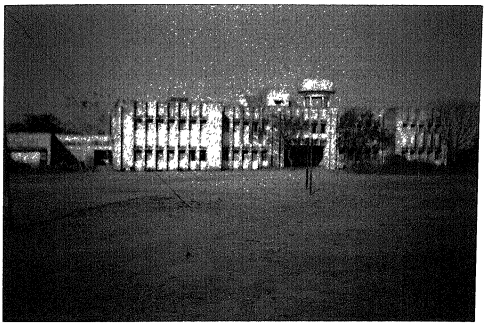
(iii) Their performance is far from satisfactory.

(iv) The Sarva Shikhsa Abhiyan and the Adult Education Programme are not functioning properly and most of the claims are not justified by the ground realities. (PLATE 25 B)

(v) The educational programmes of SC/ST as well as the women are not satisfactory.

(vi) The Sarva Shikhsa Abhiyan and the Adult Education Programme are not functioning properly and most of the claims are not justified by the ground realities.

(v) The educational programmes of SC/ST as well as the women are not satisfactory.



(A) NAVODAYA VIDYALAYA, MEJA

(B) WOMEN'S POLYTECHNIC, MEJA

PLATE NO - 26

(vi) The facilities for vocational education are few and far between.

(vii) The total educational development scenario is rather depressing as the educated unemployed youth are posing a serious problem and are demonstrating the futility of educational programmes.

B. Spatial pattern of Health and Medical Facilities

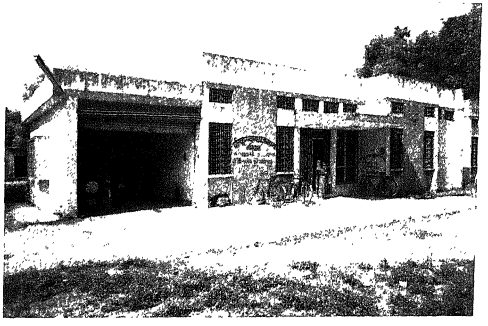
Health is an essential input for the development of human resources and quality of life. In fact, it is an index of social development. That is why it has a priority on the government agenda for planned development.

Before independence the Study Area was poorly served by medical facilities. However, the successive Five Year Plans have provided some basic health and medical facilities, which remain inadequate in respect of the needs of the people.

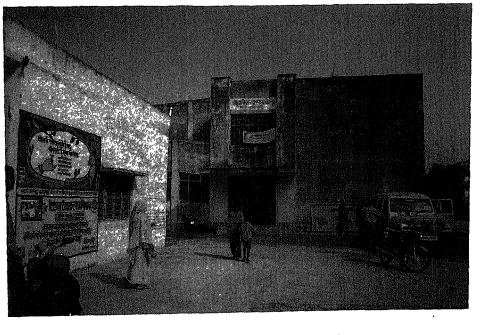
At present there are 3 allopathic hospitals/dispensaries, one each in Meja, Manda and Uruwa Blocks. They are managed by 30 doctors and have 130 beds(PLATE 22 A). The decadal increase (1990-91 to 2000-2001) in the allopathic medical facilities (vide Table 6.3) is far from satisfactory as they do not cater to the needs of the people.

The situation of the Ayurvedic hospitals/dispensaries is more pathetic with 6 dispensaries which are run by 6 doctor and are just equipped with 11 beds (vide Table 6.3). The decadal progress of the Ayurvedic medical facilities indicates the Government apathy and indifference to the medical system.

In Meja Tahsil, only 40 villages lie within 1 km. of the existing allopathic hospitals / Primary Health Centres, whereas 167 of them lie beyond the range of 5 kms. Similar situation exists in the spatial distribution of family welfare centres (PLATE 27 A, B), where only 109 villages lie within 1 km. of these family welfare centres, whereas those lying between 1-5 kms. range are 137 villages, and those lying beyond 5 kms. are 111 villages. It implies that the meager services, which are available, are also inaccessible to the local community, while the primary health



(A) FAMILY PLANNING AWARENESS PROGRAMME AT SIRSA



(B) COMMUNITY HEALTH CENTRE

PLATE NO - 27

care programme envisages it as "essential health care and universally accessible to all citizens".[8] The target of the "Health for All (HFA) was to be achieved by 2000 A.D. The spatial and physical spread of medical/health services in the Study Area belies the official claims and the objectives of the H.F.A.

Problems of Health Care Facilities

One of the serious challenges relates to the poor health and sanitation conditions in the country side. It is an uphill task in view of the poor and inadequate medical/health services, which fail to cope with the needs in the region.

There are well conceived health programme but their poor implementation in the region is a matter of great concern. The Primary Health Centres are seldom attended by the doctors, who often make casual visits and entirely depend on supporting staff, while they run their private clinics in urban centres.

Due to scanty financial resources, these centres are unable to provide medicines to the patients. The common complaint is that medicines provided to them reach the private medical stores with the connivance of the staff.

In fact, the facilities and working conditions are not at all satisfactory. It has a bearing on quality of the services available to the `have - nots' and the `underprivileged'. Supervision and support to the field staff are virtually missing. As a result, even in available health services, facilities remain underutilized.

C. **Pattern and Types of Housing Facilities**

Shelter is one of the basic needs of man. "Ever since the man appeared on the planet, food and shelter have been the most primary needs. There has not been any period in the life history of mankind, when he had dispensed with either of the two, though with the passage of time, the type of food and clothing have undergone a constant change."[9]

That is why human dwelling constitutes a universal element of the cultural landscape. It provides a tangible testimony of the complex relations between man

TABLE - 6.3
MEDICAL FACILITIES IN MEJA TAHSIL

		ALLOPATHIC				AYURVEDIC		
BLOCK	YEAR	Hospitals & Dispensaries	P.H.C.	No. of Beds	No. of Doctors	Hospitals & Dispensaries	No. of Beds	No. of Doctors
MEJA	1990-91	1	2	36	9	2	7	2
	2000-01	2	4	42	11	2	7	2
KORAON	1990-91	0	1	4	1	0	0	0
	2000-01	0	1	4	1	0	0	0
MANDA	1990-91	1	2	14	4	1	2	1
	2000-01	2	3	34	6	2	2	2
URUWA	1990-91	1	3	50	10	1	0	0
	2000-01	1	4	58	12	2	2	2
TOTAL TAHSIL	1990-91	3	8	104	24	4	9	3
	2000-01	3	12	138	30	6	11	6

SOURCE: ZILA SANKHIKIYA PATRIKA, JANPAD ALLAHABAD 1990 & 2000

and environment. In fact, the house represents the cultural heritage of the past and the survival of tradition. [10]

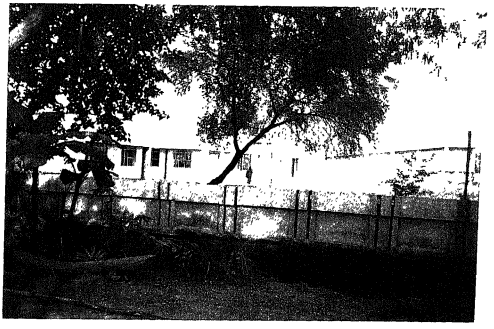
In the study area, the rural dwellings are broadly of two types. (1) Kuchha Houses with mud walls, thatched or tiled roofs and (2) Pucca houses with brick walls and cemented roofs / tiled roofs (PLATE 29 B). In Manda and Koraon Blocks stone has been used as a building material, which has given a distinctive pattern of stone walled and thatched / tiles roofs (PLATE 29 A). In fact, the majority of rural dwellings use local building materials and abide by the traditional architectural styles. Now, there is a tendency among the well-to-do sections of the society to opt for the pucca brick and cemented houses, which also become status symbols.

Problems of Housing Facilities

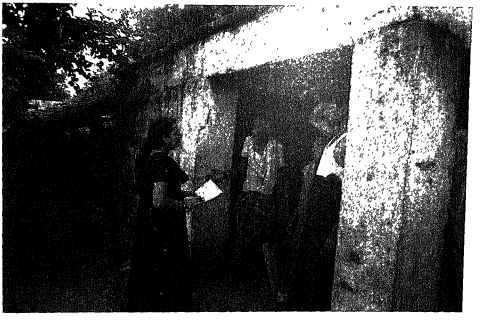
Even a cursory visit to the study area gives an impression of poor housing conditions which seldom comply with the basic residential requirements - sanitation, ventilation, disposal of water, lavatory, bathroom and culinary facilities etc. It appears that the Gram Panchayata have not taken any measures for improving the environmental and sanitary conditions of the rural dwellings. Even the availability of drinking water is a problem in some villages in Manda, Koron and Meja Blocks. (PLATE 28 B)

Indira Awas Yojana and the Ambedkar Gram Yojana have also failed to make a visible impact on the housing conditions of the poor as well as SC/ST population.

As cooking gas is not available to the rural household, nor they have developed Gobar Gas Plants, they depend upon traditional fuels cowdung, fuel wood and kerosene which also worsen their environmental conditions and make the dwellings dark and dingy.



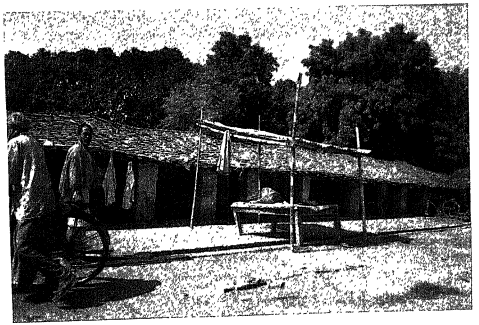
(A) COMMUNITY HEALTH CENTRE AT KORAON



(B) INTERVIEWING PEOPLE ABOUT THEIR PROBLEMS AT BASAHRA VILLAGE IN KORAON BLOCK

P L A T E N O - 28

(A) STONE HOUSES AT MEJA



(B) TILED HOUSE AT SIRSA

PLATE NO -29

As the majority of the population of the Study Area is poor, their material conditions speak of their poverty and squalor. As the supply of electricity is limited to a few hours and is erratic, during night the villages are plunged in darkness.

6.5 SPATIAL PLANNING FOR SOCIAL FACILITIES

(A) Spatial Planning for Educational Facilities

An attempt has been made to draw up a spatial plan for the development of educational facilities for Meja Tahsil in the light of its problems and challenges. There is urgent need for improving infra-structural and teaching facilities, which are not compatible with the regional requirements. The existing educational institutions should be strengthened and new ones should be set up in areas of paucity. The establishment of a Navodaya Vidyalaya and Women's Polytechnic at Meja, is a step in this direction (PLATE 26 A, B)

There is urgent need for developing vocational/technical training programmes in the Higher Secondary Schools. Technical schools after completing secondary education should be given top priority. As I.T. is both a labour creating and labour saving technology, it should be introduced at the Higher Secondary level and strengthened at the college level. In fact, there is need for restructuring the college syllabi and improving the educational standards of the degree college of Sirsa by providing necessary infra-structural and teaching facilities.

Efforts should be made for social mobilisation of local communities for the Sarva Shiksha Abhiyan and Total Adult Literacy Programme and for promotion of primary education as well as female education.

The Mid - Day Meal Programme has made a difference in attendance and retention. It should cover all primary schools under the supervision of the Gram Panchayats.

B Spatial Planning for Health Facilities

The poor conditions of the existing medical/health services should be improved by the Government.

The adequate number of the doctors, nursing staff and attendants should be provided to the Primary Health Centres / Dispensaries so that they can attend to the patients.

The adequate financial resources should be provided to them for purchase of essential medicines and other infra-structural facilities.

As the number of Primary Health Centres and Dispensaries is too low for the regional requirements, new health centres should be opened in the areas which need them.

Perhaps the situation of the medical/health services in the Study Area is highly unsatisfactory due to poor supervision and control. Steps should be taken so that available services are properly utilised and the medical staff is made more sensitive and responsive to the helpless poor patients.

There is a need for mobile dispensaries for reaching out to the remote areas of the region.

There should be health care awareness programme for the rural folk. "Though the 70% of the rural population is aware of the existence of PHCs and Dispensaries, only a third of them have utilized the same." [11] . Establishment of community health centres, like the one recently opened in the Study Area, is the need of the hour. (PLATE 28 A)

Adequate facilities for conveyance for visiting serious patients or to transfer them to the District Civil Hospital should be provided.

The poor and the under-privileged sections of the society should be provided free medical facilities. The private charitable institutions should also help in this noble cause.

C Spatial Planning for Housing Facilities

The housing conditions should be improved with the utilisation of local building materials and masons, because they know fully well how to use and cope with the factors, which are involved in the regional architecture. An ideal rural

dwelling should have two living rooms, a sanitary kitchen equipped with fuel saving hearths (such as smokeless chulas), a water tap, a bath, a lavatory and a separate store room. There should be provision for separate accommodation for animals which often cohabit with the inmates of the family.

A rural house should have a varandah and a courtyard, which are essential for socio-economic needs of the people. The house must meet the occupational needs of the family as they vary from occupation to occupation.

The schemes of the Indira Awas Yojna and the Ambedkar Grams for the SC/ST population should be vigorously carried out. There should be housing subsidies for the poor of the OBC and Upper Castes also.

The physical layout of the house and its environs must take care of environmental sanitation.

The strategy for development of rural housing must be based on a realistic assessment of the housing requirements which should be determined through the involvement and participation of the Gram Panchayats, which can facilitate different groups per their needs.

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CHAPTER – 7

SUMMARY AND CONCLUSION

Multi-level spatial planning addresses equitably to the problems of integrated development of a micro-region. It serves to resolve the spatial disparities in socio-economic development which have accentuated as a result of the successive Five Year Plans. Spatial Planning enables an objective assessment of the local needs and resources. In a developing country, such as India, spatial planning enables optimization of economic development, social welfare and political aspiration of the people. It not only helps to analyze existing spatial structures, but also to generate structural changes to meet the needs of a regional economy and achieve the objective of planned development.

Spatial Planning helps to remove obstacles to balanced regional development, by identifying spatio-functional gaps in the space economy of the specified region. Spatial strategy for micro-level planning is therefore essential for sustainable development. It enables equitable allocation of resources and minimizes disparities, so that a spatial structure conducive to the planned development of a region is evolved.

This research is a modest attempt to develop an integrated spatial strategy for the balanced development of Meja Tahsil, located in the south-eastern periphery of Allahabad District, Uttar Pradesh. Within the Study Area, there exist wide spatial disparities in development as well as gaps in socio-functional system. Spatial Planning has been applied to analyze existing spatial structures and to evaluate their efficiency in meeting the needs of the local economy. Spatial planning

strategies have also been formulated for the balanced development of the Study Area.

Chapter 1 is devoted to the 'Conceptual framework' for Spatial planning and presents a theoretical background for the application of Spatial Planning strategies for socio-economic development of a region. The fundamental concepts of 'Space', 'Region' and 'Planning' are discussed in detail, with the objective of preparing a conceptual backdrop for the application of spatial planning to Regional development.

The need and relevance of 'Planning' as compared to the Laissez Faire has been elaborated. Planning is essential as a means of socio-economic development as it help to achieve the desired objectives in a shorter span of time. It removes Spatial disparities and serves to restore balance between production and consumption through effective distribution mechanism. While 'Economic Planning' is essential for economic development of a region, it can not lead to 'Social development' unless it is linked to social equity. In the Indian context, the pattern of development and the structure of socio-economic relations must be planned in such a way that it not only leads to economic growth but also equitable distribution of income and wealth. However, the reality is that, wide inter-regional and intra-regional disparities still exist in terms of socio-economic development.

Spatial planning can lead to balanced socio-economic development. In developing countries such as India, imbalances exist in the functional organization of spatial structures. Spatial planning helps to identify the spatial gaps and rectify the regional socio-economic imbalances. It helps to create a spatial structure conducive to the planned development of a region by ensuring availability of 'productive resources' and 'social facilities' to all those who need and deserve. Therefore spatial planning should be viewed as an appropriate strategy for regional development.

The 'Central Place Theory' of Walter Christaller (1933) has much relevance for integrated spatial planning. The spatial and functional gaps in a region can be offset by developing and encouraging 'central places' as centres of development. This will help to create improved and more evenly spaced provision of major central functions. In India, 'Growth Centre Theory' has been adopted for rural development on the NIRD model (L K Sen) and for spatial multi-level planning a six-tier hierarchy of growth centers has been adopted. The Agropolitan development strategy (Friedman, 1973) is quite relevant for Tahsil/ Block level planning. Its emphasis on greater involvement of local people in the development process matches Mahatma Gandhi's vision of 'Gram Swarajya'.

Towards the end of the first chapter, the problem in question has been elaborated. Then, the objectives of the present study have been clearly stated. The hypotheses to be tested during the course of the study, have been listed. The research methodology has also been described in detail.

Chapter 2 provides a brief geographical background with an appraisal of the physical and human resources of Meja Tahsil. This chapter exhaustively covers the entire physical phenomenon, population and settlement. Meja Tehsil, lying between 25°2' N and 25°18' N latitude and 81°46'E and 82°20' E longitudes is situated in the south-eastern part of Allahabad District, Uttar Pradesh. Meja Tahsil covers an area of 874.6 Km^2 and has an elongated and attenuated spatial form, which is not ideal for good administrative control. The tahsil comprises four Development blocks viz., Uruwa, Meja, Manda and Koraon. The Tons river forms the northern boundary of the Tahsil.

The region may be divided into two physiographic units:

(1) The Tons basin in the north, characterized by a level alluvial topography; (2) the Vindhyan upland in the South, which has an undulating topography with scattered rocky outcrops and circum-erosional hills.

As far as the regional drainage is concerned, the Tons, which is the tributary of the Ganga, girdles the tahsil in the north and north-east. It is the master stream of the region although its seasonal regime is highly variable and it is unfit for navigation. The Lapri river in the southern part of the tahsil is the main tributary of the Tons and flows westwards from Manda hills. The Karnauti nadi flows eastwards from Manda hills. The main source of canal irrigation in the tahsil is the Belan Canal system, with water flowing from Belan river lying outside the boundary of Meja tahsil.

The Study Area enjoys a fairly good monsoon climate, characterized by long and hot summer, a fairly pleasant rainy season and a moderate cold season. January is typically the coldest month with mean minimum daily temperatures touching 9.1 ° C. May is the hottest month with the mean maximum daily temperature touching 42.1 ° C. The annual normal rainfall in Meja is 1065.2 mm, with 88% of annual rainfall, being received between mid-June and September.

The alluvial soil covers the largest area as they are found in the Khadar lands of the Tons and Lapri rivers and their tributaries. New Alluviam (Khadar) is found near river beds and alluvium (Bangar) at higher interfluves. The alluvial soils differ greatly in texture and consistency. The Black soil is also found in scattered patches and some what sandy, shallow and poor in fertility.

Only 8.10 per cent of the area of Meja Tahsil is under forest. The increasing demand for land for agricultural and non-agricultural uses, has led to deforestation in some areas. The mineral wealth of the study area is limited to sand, building stone, kankar, brick earth and Reh.

The total population of Meja tahsil is 4,34,372, with the decadal variation in population for the last three decades, exceeding 30%. This is due to inefficient implementation of family planning programs, illiteracy, poverty and social beliefs/customs of the local population. The population density in Meja Tahsil is 451 persons/km^2 . Uruwa Block with level topography and fertile alluvial soil has the

highest population density, 986 persons/km^2. The other blocks have some of their territories in Vindhyan uplands, where conditions have not favored dense settlement. There are only two towns in the Tehsil viz. (Bharatganj and Sirsa) and 90.70% of the population resides in rural settlements.

The sex-ratio in Meja Tahsil is 883 females per 1 thousand males. Age-sex structure of the study area reveals a high percentage of both males and females (around 45%) in the age group 0-14 years. The literacy level in the study area is very low (36.01%) with wide disparity in male literacy level (65.4%) and female literacy level (14.2%). The working force constitutes 32.3% of the total population with 78.2% of the total main-workers engaged in agriculture.

The type and pattern of settlements in Meja, reveal the influence of terrain, hydrography and the nature of general development. The fertile Tons basin and extensive ridge-tops provide the most favorable conditions for dense and compact settlements. However, in the uplands, the extent of compactness and size of settlements, vary as per proximity to cultivated land and presence of irrigation facilities.

The regional transport network constitutes of roads and railway. The total road network including mettalled roads and all-fair weather roads is 345 kms, for an area of 874.6 Km^2. Only 120 villages of the total 395 villages area are served by district roads. There is an urgent requirement for an integrated road network interconnecting all villages with population exceeding 500, which is in turn linked to district roads and state highways. Three railway stations viz. Meja Road, Manda Road and Unchadeeh are located in the Tehsil.

There has been an impressive growth in the telephone services and number of PCO, during the last decade. The Tahsil is served by the AIR and TV centres at Allahabad City.

Chapter 3 deals with the identification of basic units for a spatial plan, for the study area. In a spatial development plan, the identification of basic planning units forms its integral part. The concept of service center or growth foci is introduced in this chapter. Due to their central locational nature, these growth foci can act as catalysts for development. In fact, the hierarchical order of service centres at appropriate and selective locations can help in the balanced development of the region. Higher the uniformity of distribution of service centers, the more efficient is the spatial organization of human activities.

The basic functions which a service centre performs in response to the needs and requirements of the service area, are called central functions. The hierarchy of these central functions depend upon their spatial ranges and thresholds of population. Forty five relevant functions have been analyzed for determining their functional hierarchy in the study area; using the concept of `Median Threshold'. It is observed that higher order functions and specialized shops are limited to the two towns and large villages of the Study Area. This implies that there is a rank order in the central functions and services on the basis of their relative importance.

During the course of the field work an attempt was also made to a ascertain consumer's behavior and spatial preferences about various orders of central functions and services. Which for higher order central functions and specialized services, the spatial preference was for Allahabad, which is the district headquarters, for middle and lower order needs, people preferred neighbouring centres such as Sirsa, Bhartganj, Meja, Koraon and other large service centers.

The identification of central places has been carried out on the basis of functional characteristics and their centrality in keeping three criteria : (i) population of the settlement should be 2500 or more (ii) at least 10% of the working population of the settlement should be engaged in territory activities (iii) the centre should provide at least three central functions. Thirty one central functions have been

awarded score values with respect to their occurrence and relative importance in the study area. Composite Centrality Index for each center has been calculated.

Twenty five central places have been identified in the study area. These are of three orders: three 3rd order centres (growth points), six second order centres (service centres) and 16 first order centres (central villages/market centers). There are only three growth points: Sirsa, Bharatganj and Meja, which play a significant role in regional development. The northern part of the study area; with a higher density of population has a high concentration of service centres. However, the southern part of the district, which population density is relatively lower has a lower concentration of service centers.

The identification of Spatial Planning units depends upon the delineation of service/complementary area of the service centres. The interrelationship between the services centre and their service areas provide the logical basis for the identification spatial planning units. The demarcation of service areas has been attempted using the breaking point formula. The identified central places and their service areas provide on intermeshed networking of micro-spatial units. The existing centers are not adequate for balanced regional development and there is a need for additional service centres for filling up spatial gap and strengthening infrastructural facilities. The three orders of central places and their service areas, identified for the Study Area, provide viable spatial units for development planning. They may be conveniently used for locating and integrating four categories of functions and service viz economic, social, infrastructural and institutional.

Chapter 4 is devoted to the analysis of agricultural development of the study area. Although agriculture constitutes the backbone of the Indian Economy, yet Indian agriculture is characterized by low level of productivity, low level of farm technology, inadequate irrigation facilities and over dependence on the vagaries of monsoon. This scenario holds true for the study area as well. In Meja Tahsil, agriculture is the main basis of the regional economy, since 78.2 percent of the total workforce is

engaged in agriculture. However, it is essentially subsistence cultivation, which is under increasing pressure due to phenomenal rise in rural population and lack of diversification in rural economy.

The major constraints in the agricultural development of the region are lack of skill, capital and enterprise. Reliance on traditional agricultural practices and implements, due to lack of awareness of new farm technology has further retarded progress. Since conservation and management of land and water resources has been ignored, the region faces problems of soil exhaustion and soil erosion.

The existing land-use pattern in Meja Tahsil has evolved as a result of interaction of physical characteristic of the land, socio-economic conditions and institutional framework. The total reporting area in Meja Tahsil is 82,360 ha (2000-01) of which the net sown area is 61.56 per cent. The share of the forest area is 8:10 per cent. The culturable wasteland occupies 3.15 per cent, while the fallow land (including both current and other fallow) covers 10.88 per cent of the total reporting area. The share of land put to non-agricultural uses is 11.14 per cent. Over the last decade the culturable wasteland has declined due to reclamation for agriculture.

The cropping intensity in Meja Tahsil was 133.77 in 2000-01. Since there is not much scope for extension of cultivated area, the greater intensity of cropping is the alternative strategy for increasing agricultural production.

The cropping pattern of the study area is traditional in which most of the cropped land is put under food crops and cash crops occupy a small percent of the total cropped area. There are three main cropping seasons: Kharif, Rabi and Zaid season. In terms of both production and area, Rabi crops are more important than Kharif crops. The principal Kharif crops in the region are Paddy, Millet, Maize, Moong and Arhar. The main Rabi crops include Wheat, Barley, grams, peas, masoor, potato, etc. Wheat the most important staple crop of the area covering 35.5 percent of the total cropped area. Rice is the most important Kharif crop,

conservation, in order to check soil erosion and improve soil fertility. The existing network of irrigational facilities should be expanded to meet present and future demands by opening new canals and boring new tube-wells, installing pumpsets, digging masonary wells etc. It is necessary to use high yielding variety of seeds to augment crop production. To ensure better utilization of land resources, the practice of multiple and cash cropping should be encouraged. Sufficient facilities should be created to train and educate the farmers in using new farming methods. There is an urgent need to promote animal husbandry, farm forestry and social forestry.

Chapter 5 emphasizes the importance of Industrial development as an essential ingredient of a sound spatial planning strategy. In rural areas, development of small-scale and household industries enables diversification of the rural-economy and helps to tackle the problems of poverty and unemployment. In order to make administrative, technical and marketing inputs available to artisans and small entrepreneurs in rural areas, the government has set up a District Industries Centre (DIC) at district level and Rural Marketing and Service Centres (RMCs) at the block level. The DIC catering to Meja Tahsil, is located at Allahabad.

Under the auspices of SIDO (Small Industries Development Organization), mini-industrial estate was set up in Meja. However only five industries could be set up in the estate and therefore the performance is far from satisfactory. Since there is a minimum population threshold requirement for success of certain industrial enterprises, the identified service centers/growth foci would be ideal for locating these industries.

The important factors which determine the potential for industrial development of the study area are (1) the availability of industrial resources such as raw materials (2) the infrastructural facilities such as transportation, telecommunication, storage, electricity, financial services and banks; (3) package of

loans and incentives from various government programmes; (4) availability of technological and managerial skills. While packages announced by the Government such as 'Prime-Minister's Self Employment Scheme' are available to provide funds, lack of awareness and entrepreneurship stands in the way of industrial development in Meja Tahsil.

In 2001, there were 349 industrial units, mostly private household enterprises, which provided employment to 1647 workers in Meja Tahsil. Bharatganj and Sirsa, the two main urban centers in the Tahsil have 65 and 61 industrial units respectively. Meja with 45 industrial units and Ramnagar with 28 industrial units are also important centers. Under the Ninth Five Year Plan, the DIC has planned to set up as many as 145 industrial enterprises in Meja Tahsil with a potential for providing employment to 321 workers.

However, the small scale and household industries in Meja Tahsil have to struggle with a number of difficulties. The programmes launched by the Government are often divorced from ground realities in terms of both local resources and demand potential. The failure of the 'mini-industrial estate of Meja is a consequence of this. The lack of infrastructure facilities in the Study area such as regular power supply is also a major constraint. The local entrepreneurs do not have access to potential markets for their finished products. Unable to face competition from large industrial enterprises, located in urban centers outside the Tahsil, many small scale industries within Meja Tahsil are fighting for survival.

For the industrial development of a underdeveloped region like Meja Tahsil, it is important to support the existing small-scale enterprises within the area. Keeping in view, the regional resources and demand potential, suitable types and scale of industrial units should be selected. In Meja Tehsil, there is ample scope for developing food processing industry such as rice mill, dal mill and flour mills. Fruit and Vegetables and Dairy processing units also have a good potential in the study

area. Other regional resources such as forest produce, sandstone and Reh can also be profitably processed and marketed. The location of industrial units should be in close proximity of existing development foci and market centers. Adequate availability of raw material and infrastructural facilities is also essential for proper development of small scale enterprises.

Chapter 6 deals with Spatial Planning for the development of Social Facilities in the Study Area. The provision of adequate social facilities to the people has been accepted as a constitutional goal. An attempt has been made to evaluate the performance and spatial impact of the three basic social facilities, viz. education, health and shelter, in the Study Area.

Providing education for all is one of our primary national objectives, as envisioned in Tenth Five Year Plan. In the Study Area, Primary education is provided through 232 Junior Basic Schools and 56 Senior Basic School. At the Higher Secondary level, 22 schools and 494 teachers cater to 12,644 students. There is only one degree college in the entire tahsil, located at Sirsa. In terms of technical education, one polytechnic has been recently started at Meja.

There is uneven spatial distribution of educational facilities across the Study Area. The existing educational institutions are not equipped with all the basic infrastructure. The Sarva Shiksha Abhiyan and the Adult Education Programme are not functioning properly. The facilities for vocational education are few and far between, in Meja Tahsil.

Health is an essential input for the development of human resources and quality of life. Meja Tahsil has 3 allopathic hospitals / dispensaries, catered to by 30 doctors and having 130 beds. Besides, 12 Primary health centres and 6 Ayurvedic hospitals/dispensaries are also located in the Tahsil. The existing facilities are inadequate and fail to cope with the needs of the people. Poor implementation of

health programs in the region, is a matter of great concern. The Spatial distribution of Health facilities is such that these services are not easily accessible to all.

In terms of housing facilities, the existing dwellings seldom comply with all the basic residential requirements. Indira Awas Yojana and Ambedkar Gram Yojana have failed to make a visible impact on the housing conditions of the poor. The supply of electricity in the Tahsil is erratic and in the rural areas, electricity supply is limited to a few hours only.

An attempt has been made to draw up a spatial plan for the development of educational facilities, health facilities and housing facilities in Meja Tahsil.

There is an urgent need to improve infrastructural facilities in the existing educational institutions. Vocational / Training programmes should be developed in Higher-Secondary schools. Efforts should be made for social mobilization of local communities to ensure success of the Sarva Shiksha Abhiyan, Adult Education Program and for providing education to females. Mid-Day meal program also helps to improve attendance and retention level.

There is a need to improve the existing health services in the study area. More PHCs should be opened and adequate financial resources should be provided to them. Health Care awareness programs and mobile dispensaries can help in reaching out even to remote areas.

The strategy for development of rural housing must be based on a realistic assessment of the housing requirements. The housing conditions need to be improved with the use of local building material and masons. The physical layout of the houses must take care of environmental sanitation.

Chapter 7 presents a balanced summary and conclusion of the entire working, covering the previous six chapters. The conclusion includes a brief mention of the major problems discussed under various chapters and the plans suggested to solve these problems.

CONCLUSIONS

The present research work attempts to develop a integrated spatial strategy for the balanced development of the Meja Tahsil. The existing spatial structures in the Study Area have been analyzed and functional gaps in the existing physical and institutional infrastructure have been identified. The actual discussion regarding various problems related to the socio-economic development of the region have been spread across the first six chapters, while chapter seven deals only with the summary and conclusion of the preceding six chapters. Since Meja Tahsil is a predominantly agricultural area and lacks basic infrastructural facilities for utilizing its natural resources and accelerating its socio-economic development, the analysis and the planning has been focused on three critical sectors :- Agriculture, Small-scale / house-hold industries and Social facilities such as education, health and shelter.

These discussions lead us to the following conclusions :

- The three orders of Service Centres and their Service areas identified for the tahsil, provide viable spatial units for developmental planning and may be conveniently used for locating and integrating four categories of functions and services viz. economic, social, infrastructural and institutional.
- Although, agriculture is the main source of livelihood in the study area, this sector is characterized by low productivity, low level of farm technology and inadequate irrigation facilities. Priority should be given to measures like expanding irrigational facilities, use of HYV seeds, imparting training and education to the farmers on the use of modern farm technology, encouraging the practice of multi-cropping and cash-cropping and reclamation of culturable wasteland. There is a need to generate more awareness regarding government initiatives such as the crop insurance scheme. Animal

Husbandry, Social Forestry and Farm forestry should also be encouraged in Meja Tahsil.

- Promoting small-scale and house-hold industries in Meja Tahsil, will enable diversification of the rural economy and tackle its problems of poverty and unemployment. Foremost attention should be paid to supporting every existing artisan, village or small enterprises. Suitable types and scale of new industrial units should be identified, keeping in view, the regional resources and demand potential in Meja Tahsil. There is ample scope for development of Food-Processing industries and including in its ambit, commodities like fruits, vegetables and dairy products.
- New industrial units should be located in close proximity of existing growth foci and market centres. Regular and uninterrupted supply of raw materials and power should be ensured. Adequate infrastructural and technological facilities should be made available to the new industrial units. The District Industries Centre (DIC) should provide cooperative marketing facilities, technical assistance and appropriate technology development.
- Social facilities such as education, health and housing, are essential for socio-economic development and enhancement of living conditions and quality of life. There is an urgent need to improve infrastructural and teaching facilities, in the existing educational institutions in Meja Tahsil. Vocational and technical education should be given priority. Social mobilization of the local population is essential for ensuring success of the Sarva Shiksha Abhiyan and adult Literacy Program.
- Adequate staff and financial resources should be provided to Primary Health Centres (PHCs). Measures like deployment of mobile dispensaries will help in reaching out to remote areas. Health awareness programmes need to be conducted for the rural-folk.

- Housing conditions should be improved with the utilization of local building material. The physical layout of houses, must take care of environment sanitation. The strategy for development of rural housing must be based on a realistic estimate, determined through the involvement and participation of Gram Panchayats.

Above findings prove all hypotheses mentioned in the introduction (Chapter I) and give us sufficient insights into the problems facing the Study Area. Concrete recommendations have been made to overcome the existing problems and to accelerate balanced socio-economic development of Meja Tahsil. If the contents and the policy recommendations of the proposed spatial plans are implemented by the relevant authorities, many of the problems faced by the local population can be overcome.